ARCHITECTURE

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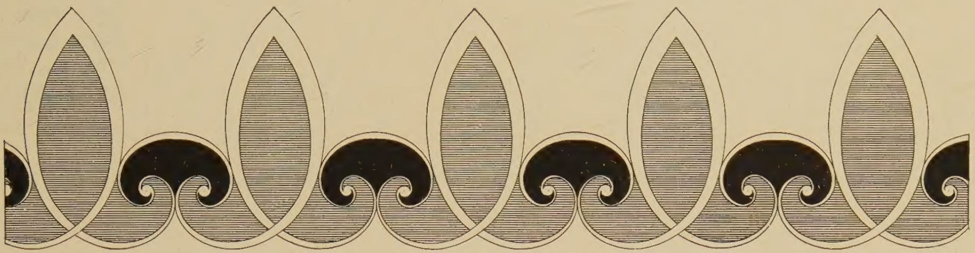

The Marvelous Curve—Spiral of Descartes

By Rutherford Boyd

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THE designer asks, what is the most marvelous curve? The Circle? Known to prehistoric man, famous for its enigma, the ratio of radius to circumference—after solving it for seven hundred places, man admits, and even proves, that he can never measure it precisely! Even this familiar curve is not the most wonderful!

The Conic Sections? An associate of Plato invented the parabola, the hyperbola and the ellipse with its two foci—magnificent curves, but not as wonderful.

The Cycloid? Unknown to the ancients, this curve was named by Galileo who "valued it for the graceful form it would give to arches in architecture."

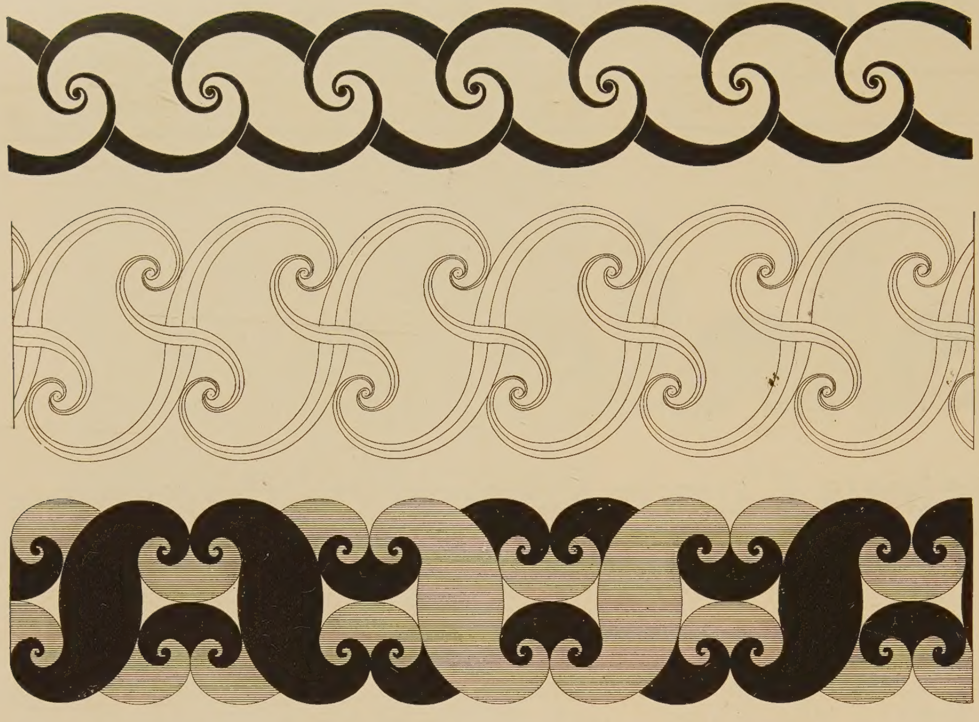
Curves in a long list, celebrated with quaint names and histories—who could forget the legend of the "Witch of Agnesi," a curve invented by a somnambulist, a woman who would make a light in her study while sleeping and carefully work out the solution of some incompleted problem! Curves, all wonderful in rhythmic form, but there is one beyond compare in subtle harmony, in variety of movement and of form. . . .

From a lamp, hollowed in stone, a burning wick glowed and grotesque shadows wavered in the depths of the grotto. Red-ochre marks on cavernous walls, shapes of children's hands, strangely mutilated fingers, tusks of a hairy mammoth, a herd of bison scratched in with flints and colored. By the lamp lay treasured implements of flint, keen of edge and point. Glistening in the light the antler of a reindeer was held between the knees of a man, some nameless Aurignacian, guiding with passionate skill his burin of flint over the close coils of his design. More than twenty thousand years ago, the curves of the Spiral.

And after thousands of years, another craftsman, an Egyptian, painting the polychrome ceiling of a tomb in ancient Thebes—a lotus pattern traced with the Spiral. A goldsmith of Mycenæ shaping, in thin metal, tortuous coils of an octopus—each waving arm of the monster is a golden Spiral. Sculptured in the slab of a Celtic tumulus, a serpent coiled in a Spiral. On the ear of an elephant image in Copan, Central America; rubricated on vellum in an Irish monastery; tattooed with pride on the cheeks of a Maori warrior; a whirlpool woven in Chinese silk; baked in the clay of Pueblo pottery; so man has admired that marvelous line, the curve of the Spiral.

Geometers, like the artists, had a passion for these curved lines, and in Syracuse on Sicily the "greatest mathematician of antiquity" published a book on spirals, giving in twenty-eight propositions the properties of the now famous "Spiral of Archimedes."

One finds this curve nowadays in a coiled rope, in a tightly



At the left are shown several patterns worked out by Mr. Boyd, all of these being produced by drawing lines along the edge of a curve which he, himself, made similar to the French curves commonly known, but constructed as a true equiangular spiral

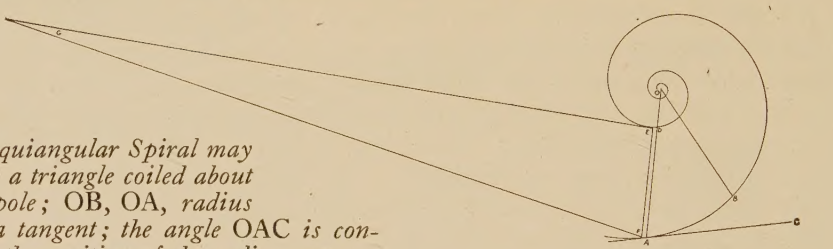


Fig. 1. The Equiangular Spiral may be conceived as a triangle coiled about its apex. O, *pole;* OB, OA, *radius vectors;* AC, *a tangent; the angle* OAC *is constant whatever the position of the radius vector*

wound watch spring, or a roll of ribbon. But this was not the spiral that man admired in the phenomena of nature about him. With his left hand Leonardo da Vinci drew these curves and speculated about them, and Dürer drew his "Line of the Shell," but the secret of the spiral was not yet solved.

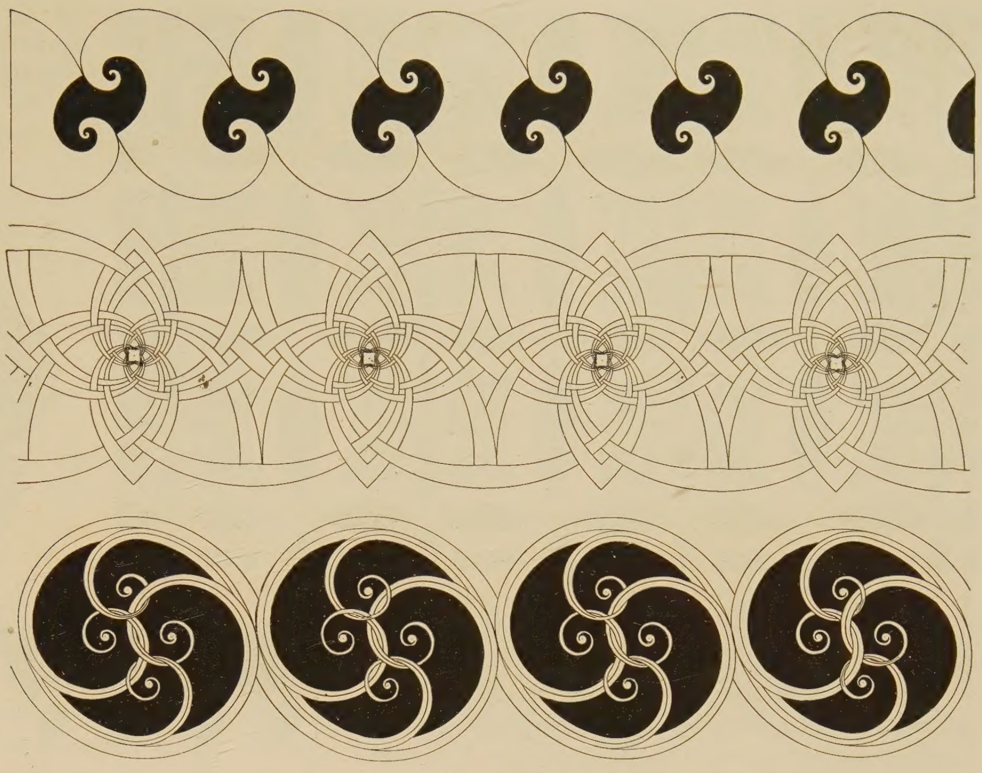
In the spring of 1629 a young French philosopher, finding life in Paris too distracting for meditation, settled in Holland, leaving his friend, a Father Mersenne, as his literary and scientific representative. To him in the next twenty years he wrote frequently on problems in physics, the theory of music, and mathematics. In 1638, from his seclusion in Holland, he wrote to his friend describing for the first time in history the curve which makes equal angles with all radii drawn through the origin. This curve was the famous Equiangular Spiral, thus invented by Rene Descartes, the father of Analytic Geometry, the great French philosopher and mathematician.

"Spira Mirabilis" it was called by Bernouilli, who delighted in the curve a few years later, and in 1704 the name "Logarithmic Spiral" was first used to describe the curve.

It was not until 1821 that Sir John Leslie wrote: "This Spiral exactly resembles the general form . . . of the nautilus," and just two hundred years after its invention by Descartes, Canon Moseley published in England the celebrated treatise on the geometrical forms of shells.

So began an investigation that scientists and enthusiasts still continue, the Spiral in Nature.

Even the brilliance of Archimedes, with his many inventions beside his Spiral, did not visualize the more subtle and majestic properties of the equiangular spiral. Man admired these spirals in natural forms about him, used them



One has only to construct such a curve for his own use, and experiment with it for a few moments, to find the infinite pattern possibilities that are wrapped up in it. Considerations of areas are as important as those of the curve itself

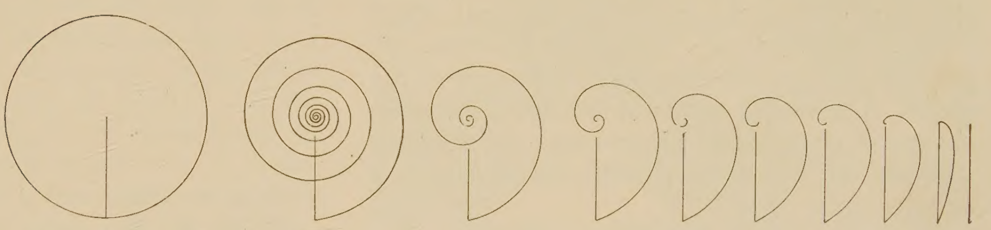


Fig. 2. The radius of the circle and the longest radius vectors shown, are equal in this series, and the poles are aligned. Note the great change in character as the constant angle decreases

as symbols and decorations almost the world over, for untold centuries, but never understood their subtleties in proportion and structure until years after their discovery by Descartes. So recent is man's acquaintance with the true construction of the spiral that we can understand the lack of appreciation of this curve as a potential source or basis of design.

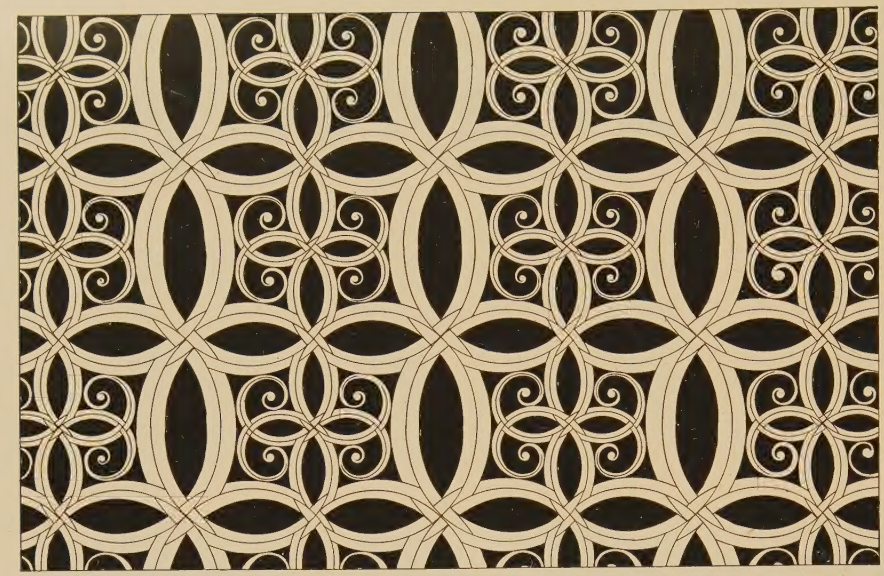
Some simple definitions are necessary, to define any spiral. It is a line which, starting from a point of origin, continually diminishes in curvature as it recedes from that point. The point of origin, also called the pole, is sometimes erroneously called the centre, although it is obvious from our definition that the pole is never the centre, no matter which spiral or how much of the curve has been traced.

A straight line, having its extremity in the pole, is called a radius vector (O A in Fig. 1), and the angle between any two positions of the radius vector is called the vector angle (A O B). The part of any spiral curve formed by a complete revolution of the radius vector (D B A) (in other words, with a vector angle of 360°) is commonly called a whorl or a spire.

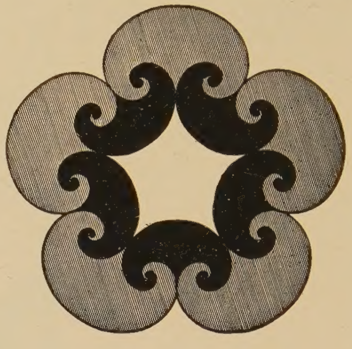
The equiangular spiral is so-called because the angle between tangent and radius vector at any point is a constant (angle O A C).

It is also known as the logarithmic spiral because the vector angles about the pole are proportional to the logarithms of the successive radii.

We must distinguish clearly between the properties and form of the spiral of Archimedes and the equiangular spiral. The Archimedian spiral may be compared to a long rectangle coiled on itself. Hence it is evident that the radius vector can increase only in arith-



At left, a pattern made from an equiangular spiral with a rectangular arrangement of the poles



metical progression and each whorl is equidistant.

In contrast, the equiangular spiral may be considered as a long triangle wrapped up on itself: the distance on the radius vector between the outer end of the curve and the next whorl is the shortest side of a triangle (E F) whose opposite angle (G) will terminate at the pole of the spiral. The radius vector of this spiral increases always in geometrical progression, the distance between the whorls constantly increasing in a definite ratio.

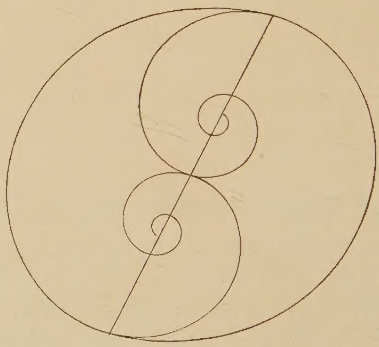
Perhaps the most surprisingly unique property of these spirals is that any arc of the curve is similar to any other arc of the same spiral. Or, popularly speaking, the Equiangular Spiral is a curve which constantly changes its *size* but never changes its *shape!*

When one conceives the infinite variety of curves in the range of these spirals, with the circle as one limit and the straight line as the other, it is an amazing series. The diagram (Fig. 2) shows a few selections from this series.

The latent characteristics and unique individuality of proportion in structure and design of this marvelous group of curves stimulated an investigation which was begun some years ago by the artist, Edward B. Edwards, and the author.

Thus was commenced a study which eventually led to the production of a large group of basic designs, mathematically constructed in their entirety, demonstrating some of the spatial properties of this group of curves. These illustrations are selected from this group and are published here for the first time. To avoid any attempt to "achieve infinity" at the poles of the spirals, the smaller whorls adjacent to the origin are omitted. The black and white and gray tones are arbitrarily chosen, for visual contrast only. For simplicity each illustration demonstrates an arrangement of spirals in one ratio only.

Every arrangement of spiral forms and their combinations involves consideration of the resultant areas as well as the curves themselves. Several of these drawings emphasize the spiral characteristics in an absolutely unique devel-

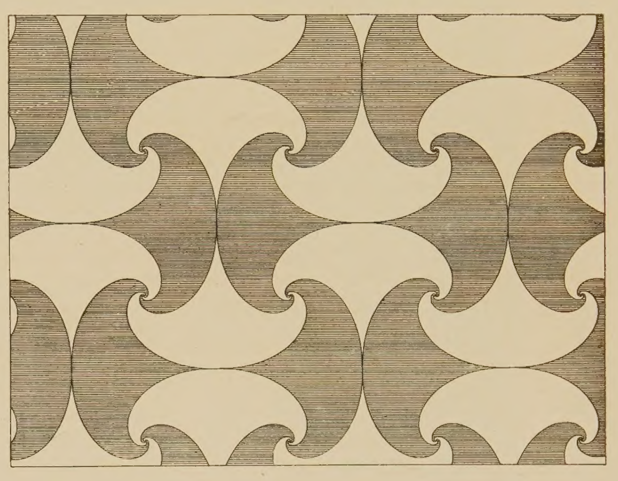


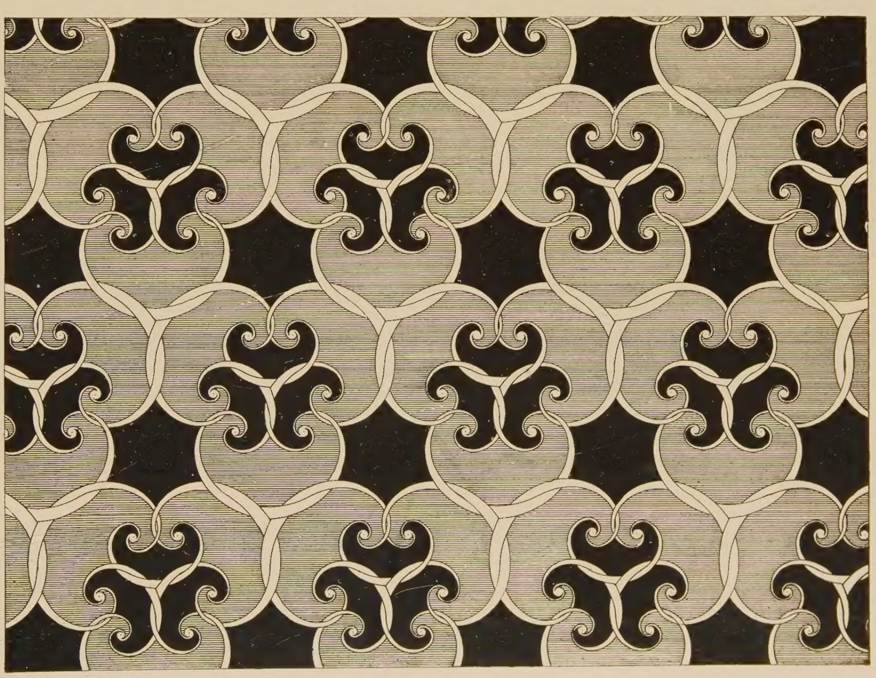
At right, "The Spiral of the Triple Osculation." If you will trace this particular spiral upon two pieces of tracing paper, you will find that the two, when superimposed, touch at three points constantly as one is revolved about the other, and a line drawn through the two poles will connect these three points of contact opment of shape; in the design at the top of page 65 the white areas are interlocked with smaller black areas generated from the same poles. The smaller units coincide and interlock precisely with the larger ones and are exactly similar in shape.

In the pattern at the foot of page 67 there is an interesting development of a spiral form in three main divisions. The three smaller black areas interlock precisely in the same relative position as do the three larger gray areas and all six figures in the field of this design are mathematically similar in their individual spiral shape.

One of the most fascinating of the curves might be called "The Spiral of the Triple Osculation." An amusing "phenomenon of affection" is illustrated here: two spirals meet and kiss—once, twice, thrice—and part forever. This action, so unusual to inanimate objects, must be demonstrated to be appreciated. The reader may draw accurately this equiangular spiral on clear tracing paper and duplicate the drawing precisely on another piece. Place the two in the position illustrated, both spirals turning in the same direction, and draw as a guide a straight line on the margin of the lower spiral and trace it exactly in position on the other. Now, holding the lower spiral firmly in position, move the other spiral over it, being careful to keep the guide lines parallel. As the spirals move in on each other you will find this triple osculation must occur through all similar positions with the outer whorls moving away from each other. An absorbing diversion in geometry—and one may always draw a straight line through the poles and the three points of contact.

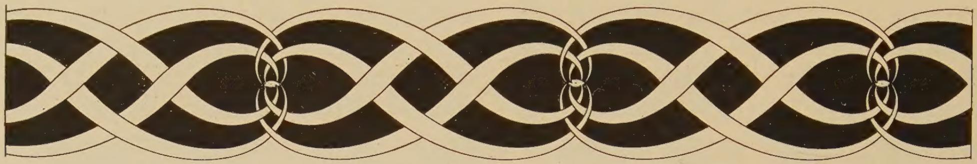
This picture suggests immediately one of the many coincidences between the symbols in decorative art and the geometry of spirals. The famous Chinese symbols of Yang Yin, the male and female principles in nature, although drawn in a circle, resemble this spiral form. However the Chinese symbols may have been derived, this is but one piece of evidence as to the distinction that must be made between many forms in traditional art and new conceptions in design evolved from the sources of geometrical structure. There is no necessity

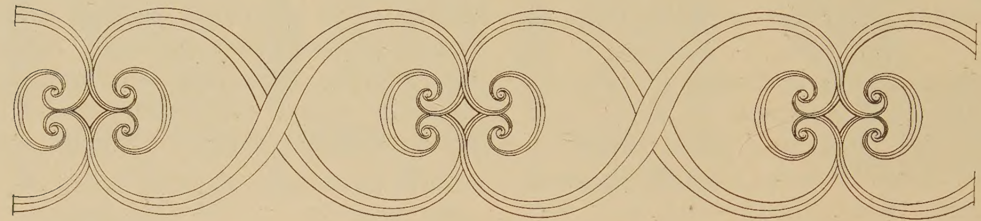


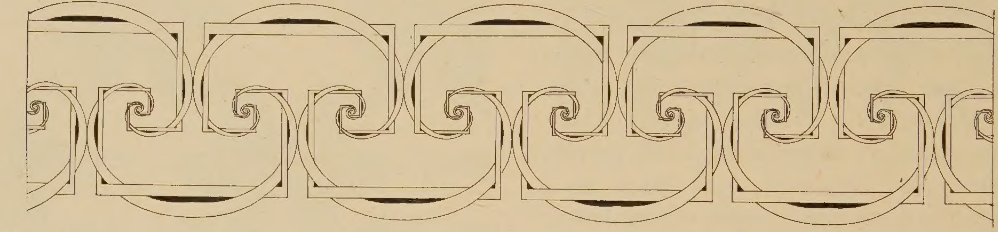


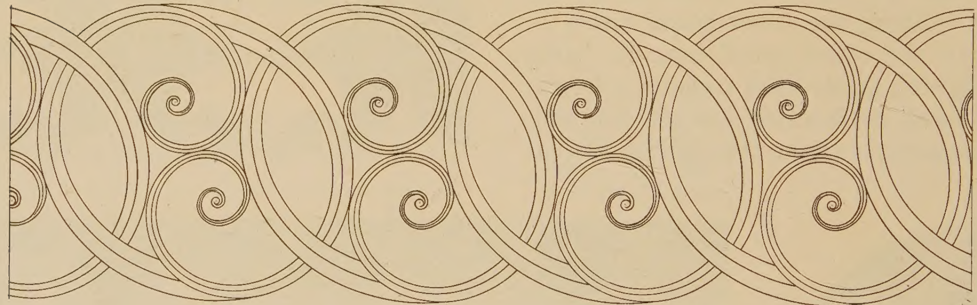
At right, a pattern in which the three smaller black areas interlock precisely at the same relative position as do the three larger gray areas. The poles are grouped, it will be noticed, at the points of an irregular hexagon to attribute to natural form or humanistic association their spatial elements and intrinsic proportions.

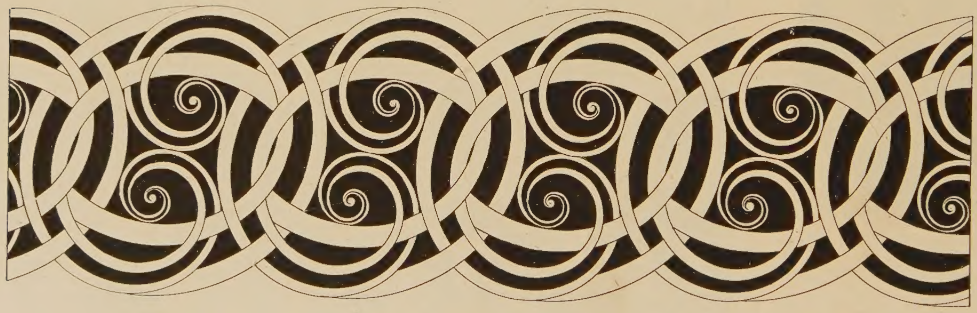
The vocabulary of the artist, the critic, the architect, and the designer would be transformed without the use of certain words, labels which have seemed indispensable to designate certain qualities or quantities. Perhaps we could proceed more clearly without some of them! However, to demonstrate with clarity the inherent characteristics of these spirals, some of the familiar names have been consciously omitted—Æsthetics, Beauty, Growth, Dynamic Symmetry, the Fourth Dimension, the Golden Section, Phyllotaxis, Modernism, and many other controversial labels.



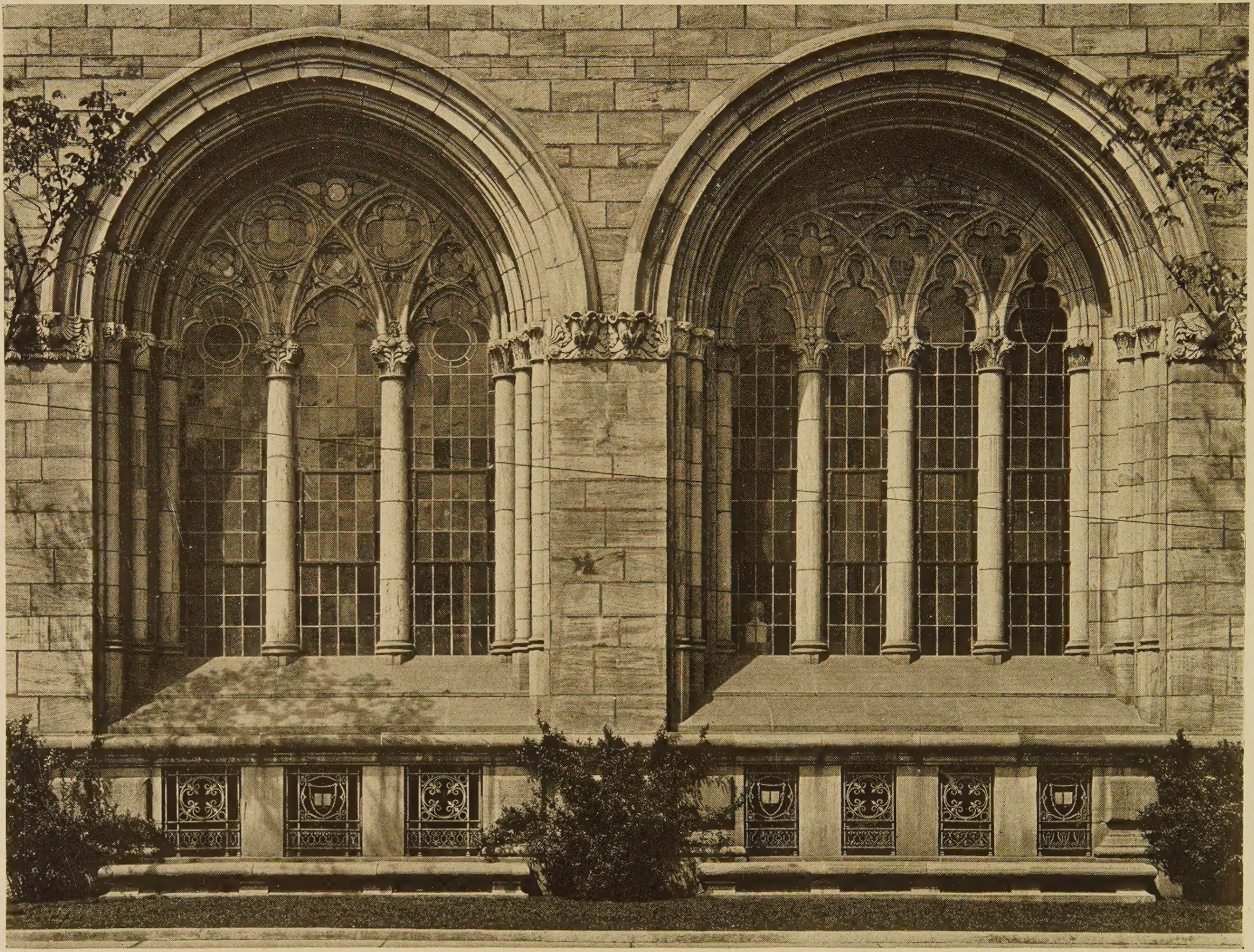




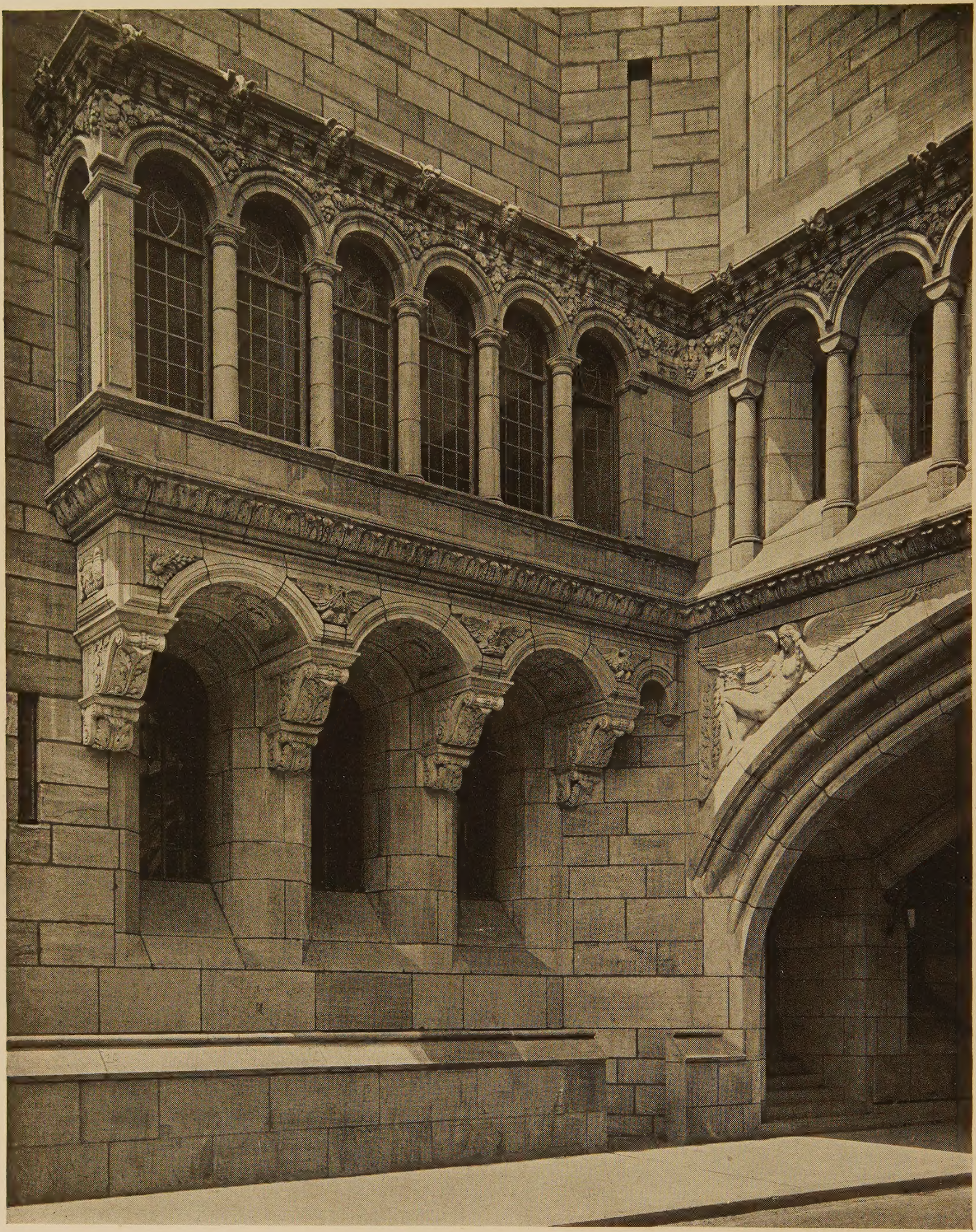




If it may be said that a line or a form was ever "invented" by man, certainly then we must pay homage to the genius of Rene Descartes and those who followed after, in the description and development of the Equiangular Spiral.

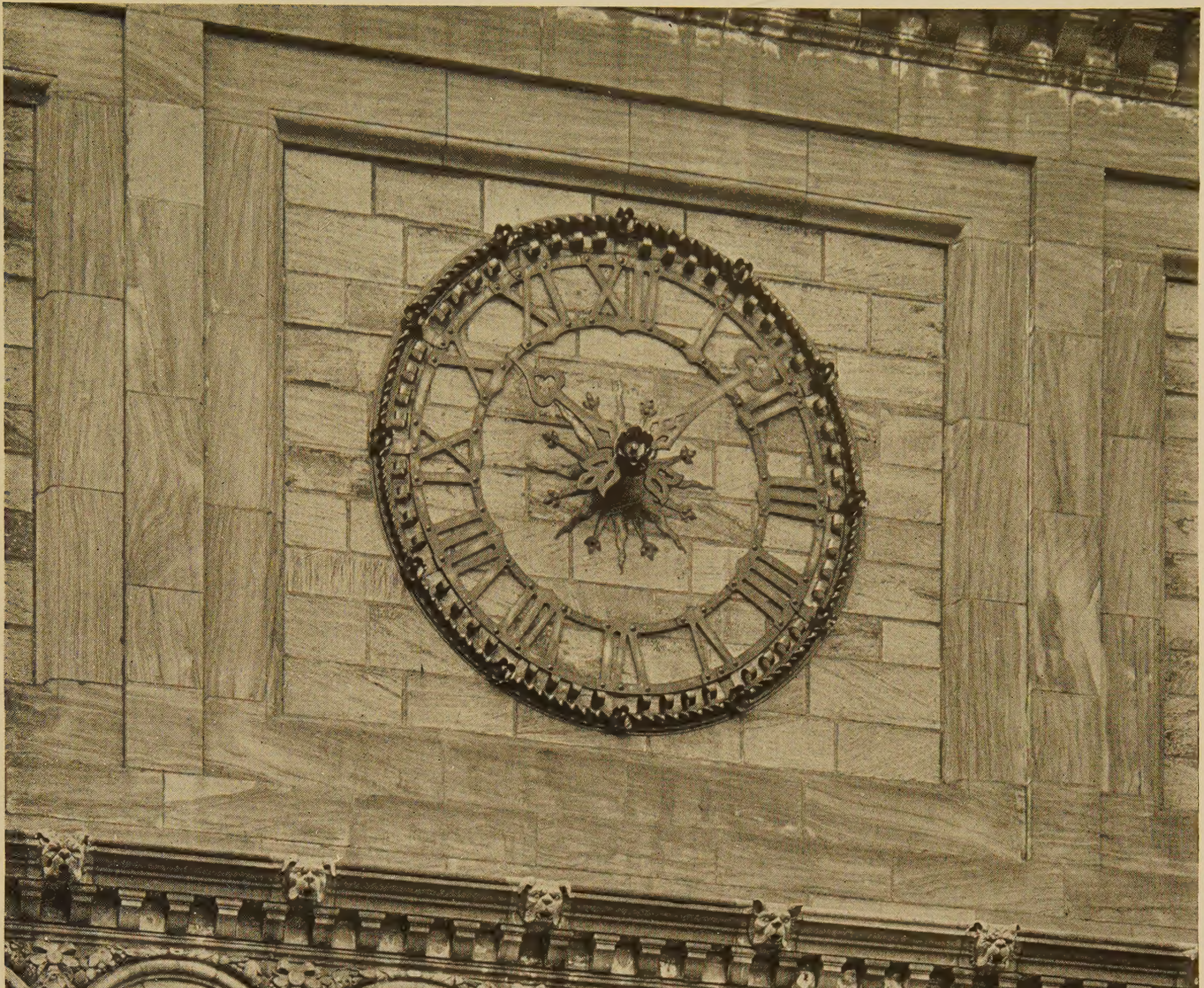


Yale Gallery of Fine Arts, New Haven, Conn. EGERTON SWARTWOUT, ARCHITECT



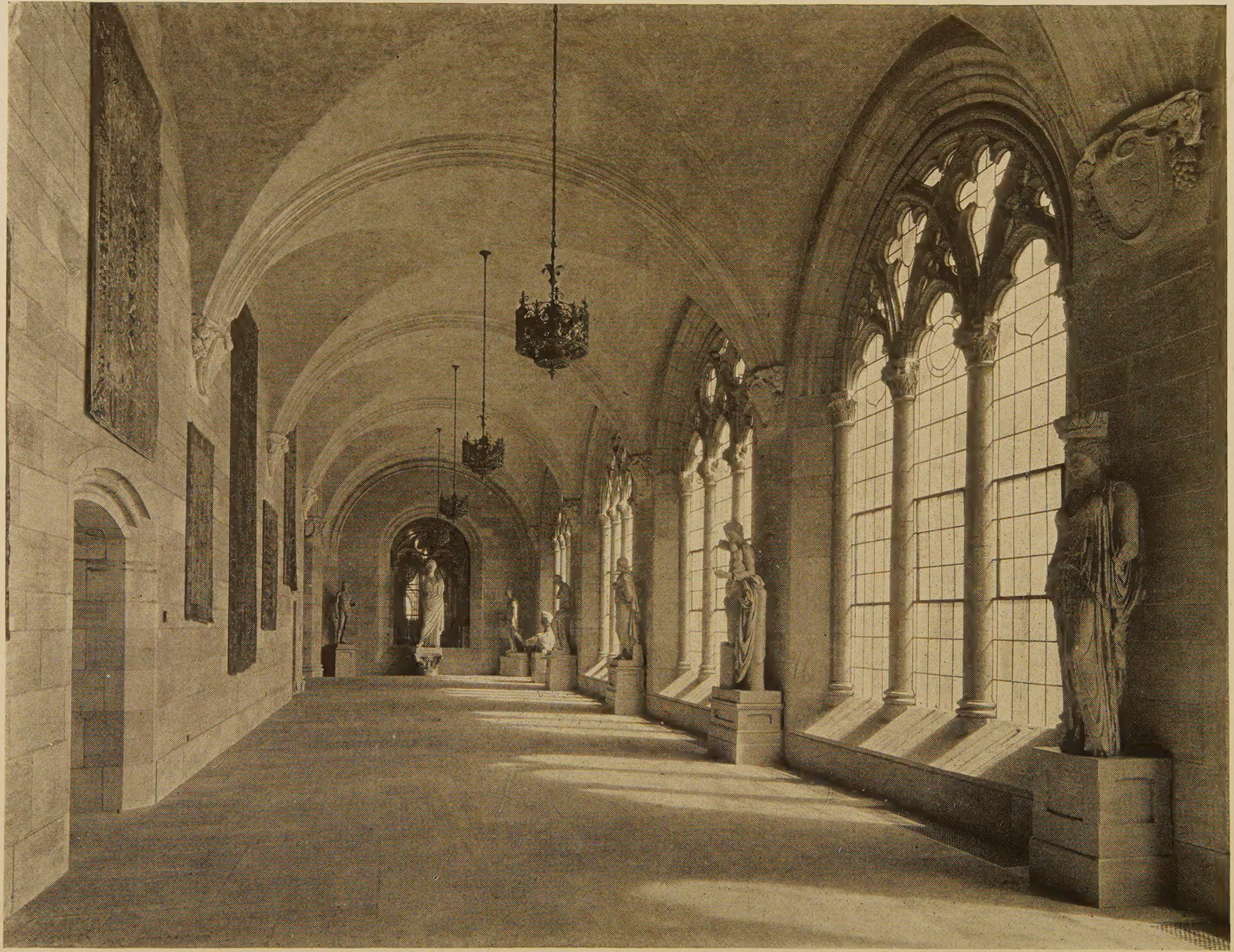
The corbels and stone arches actually support both themselves and the balcony ; there is no steel skeleton in the closet. The spandrel sculpture is by Henry Hering

Yale Gallery of Fine Arts, New Haven, Conn. EGERTON SWARTWOUT, ARCHITECT



The clock face is by Samuel Yellin, craftsman. Note the variety of stone carving in the bulldog heads

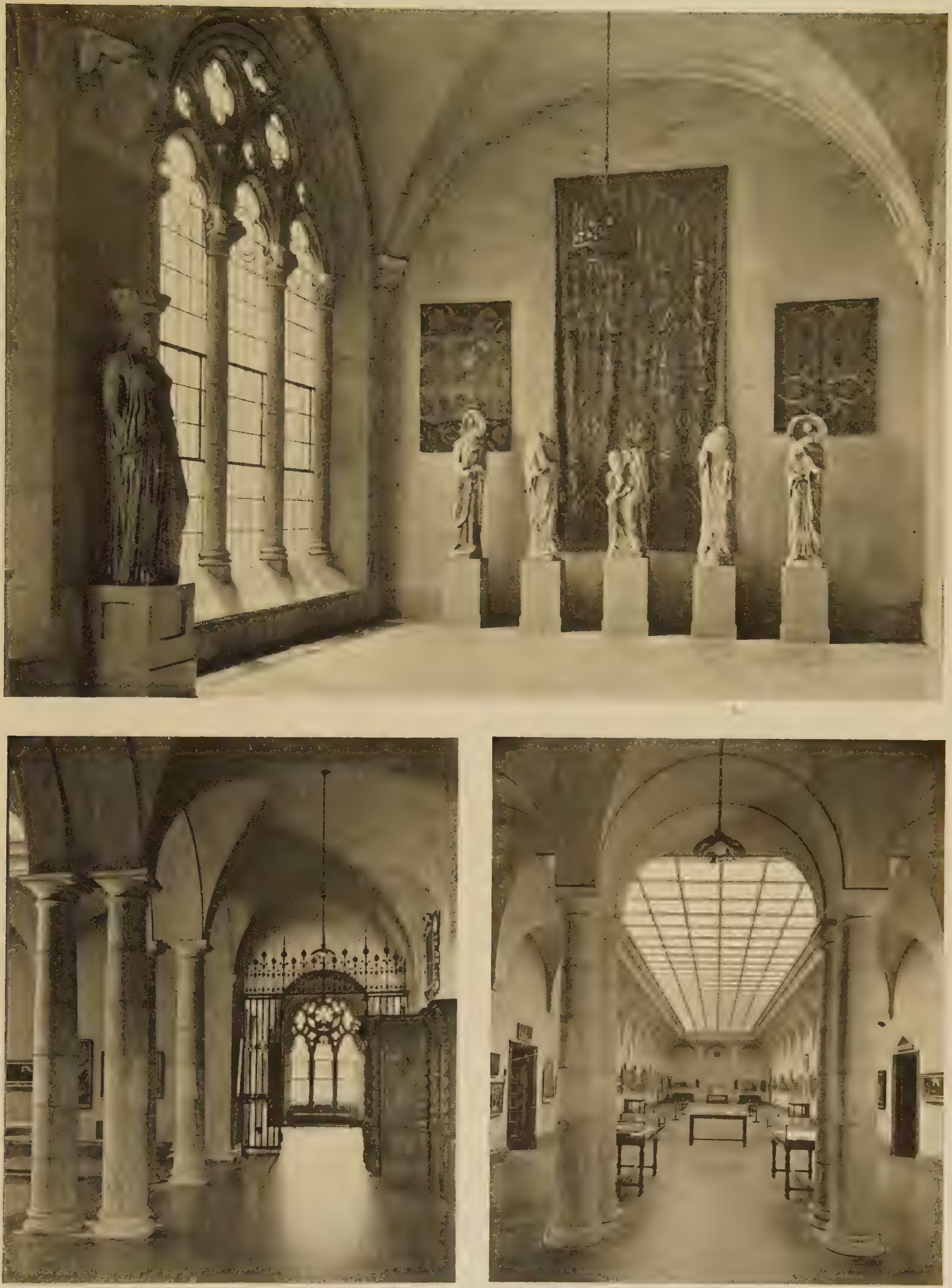
Yale Gallery of Fine Arts, New Haven, Conn. EGERTON SWARTWOUT, ARCHITECT



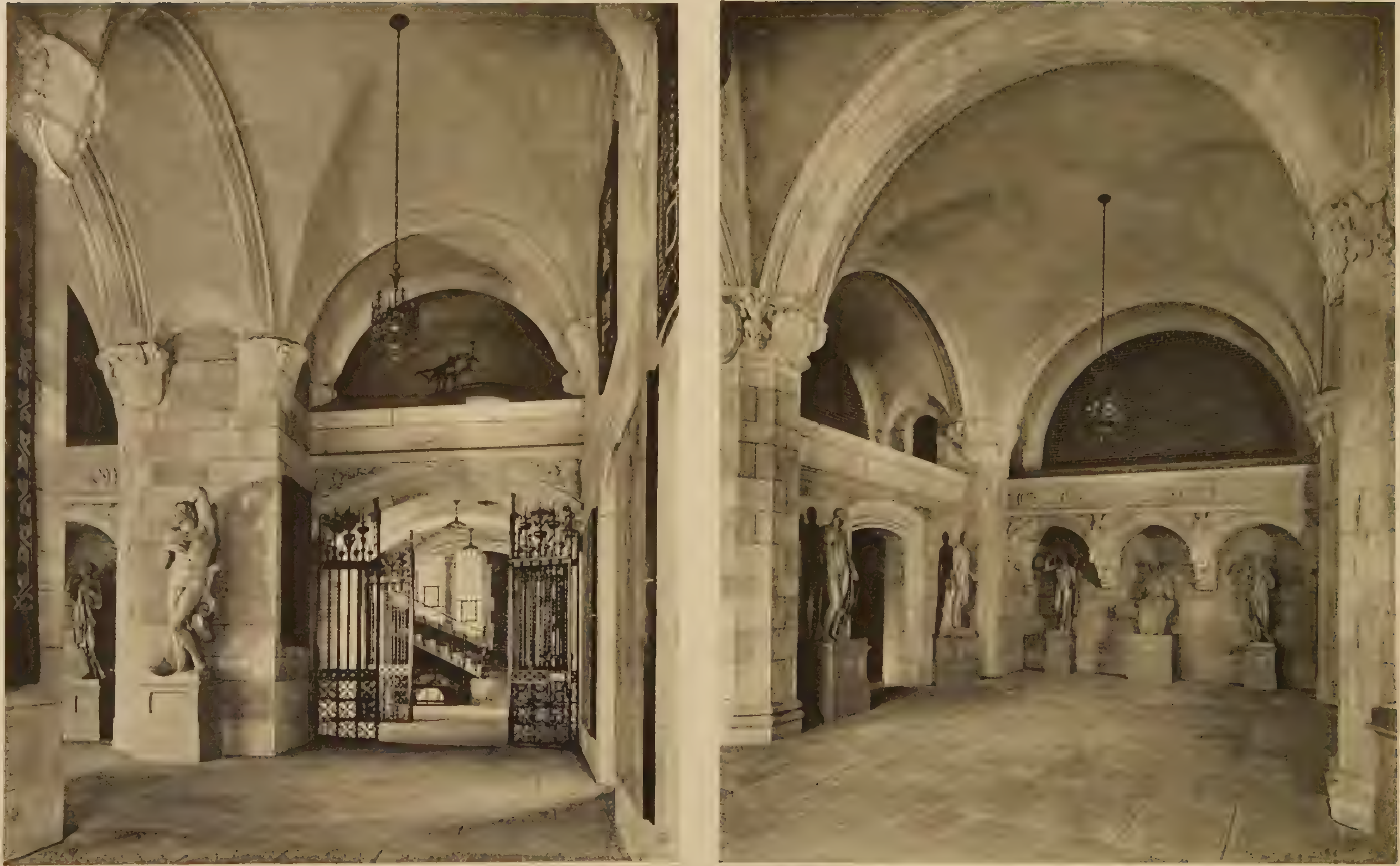
Main gallery on the Chapel Street side

Yale Gallery of Fine Arts, New Haven, Conn.

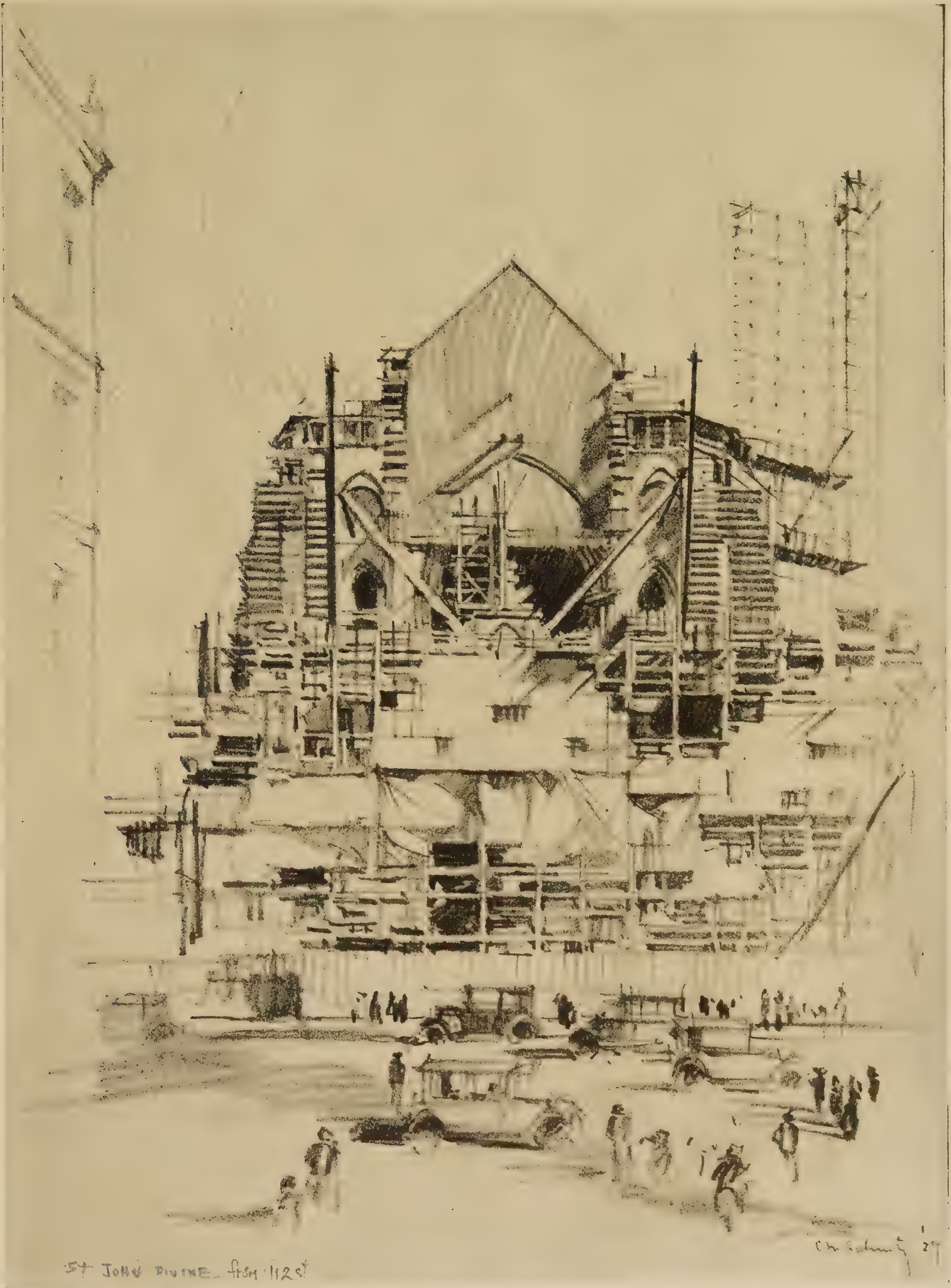
EGERTON SWARTWOUT, ARCHITECT



Yale Gallery of Fine Arts, New Haven, Conn. EGERTON SWARTWOUT, ARCHITECT

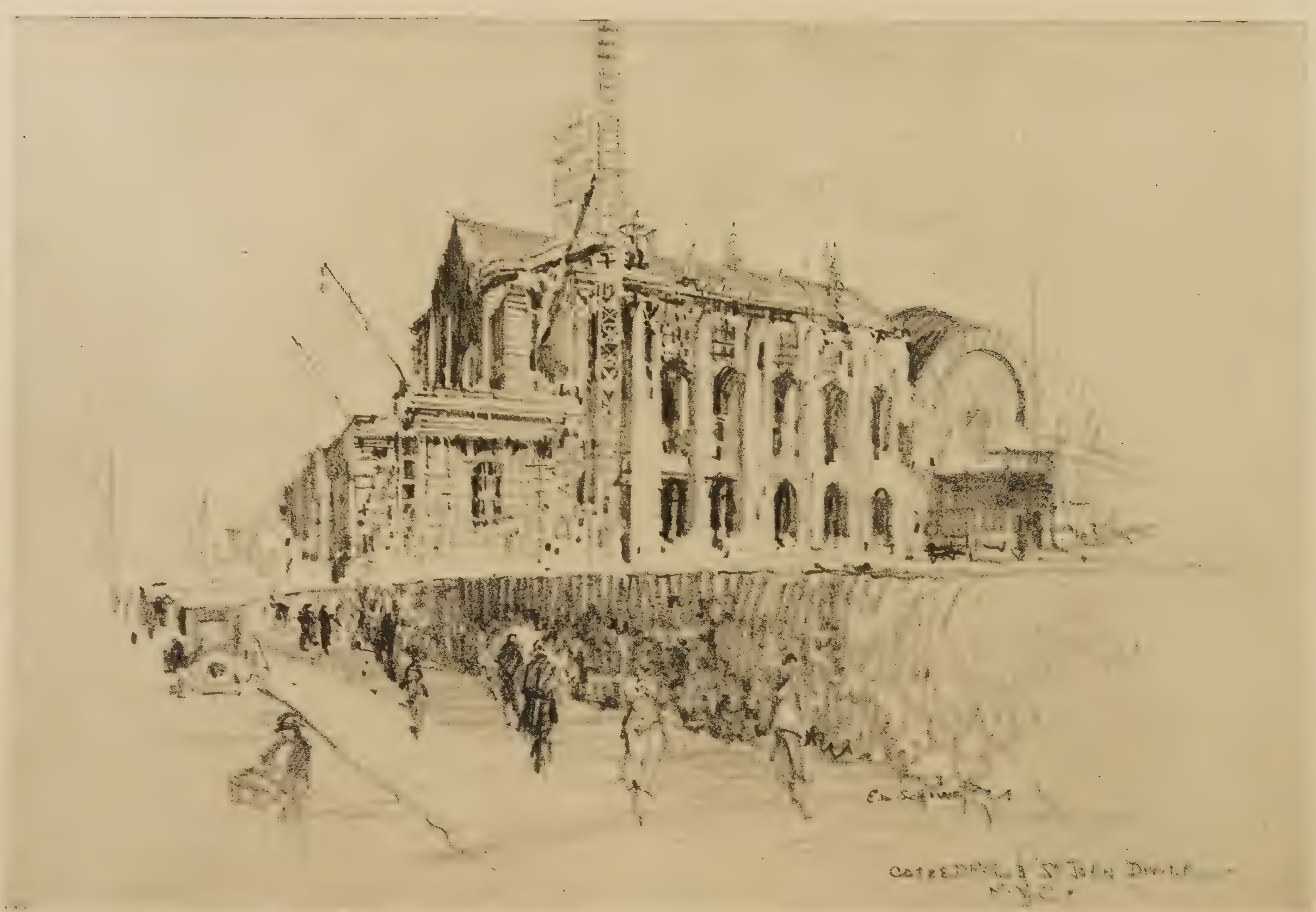


Yale Gallery of Fine Arts, New Haven, Conn. egerton swartwout, architect


St John Divine from 112 st
E M Schiwetz 29

Cathedral of St. John the Divine, the west front
Cram & Ferguson, architects

From the drawing by
Edward M. Schiwetz


E. M. Schiwetz
Cathedral of St. John Divine
N.Y.C.

Cathedral of St. John the Divine
Cram & Ferguson, architects

From the drawing by
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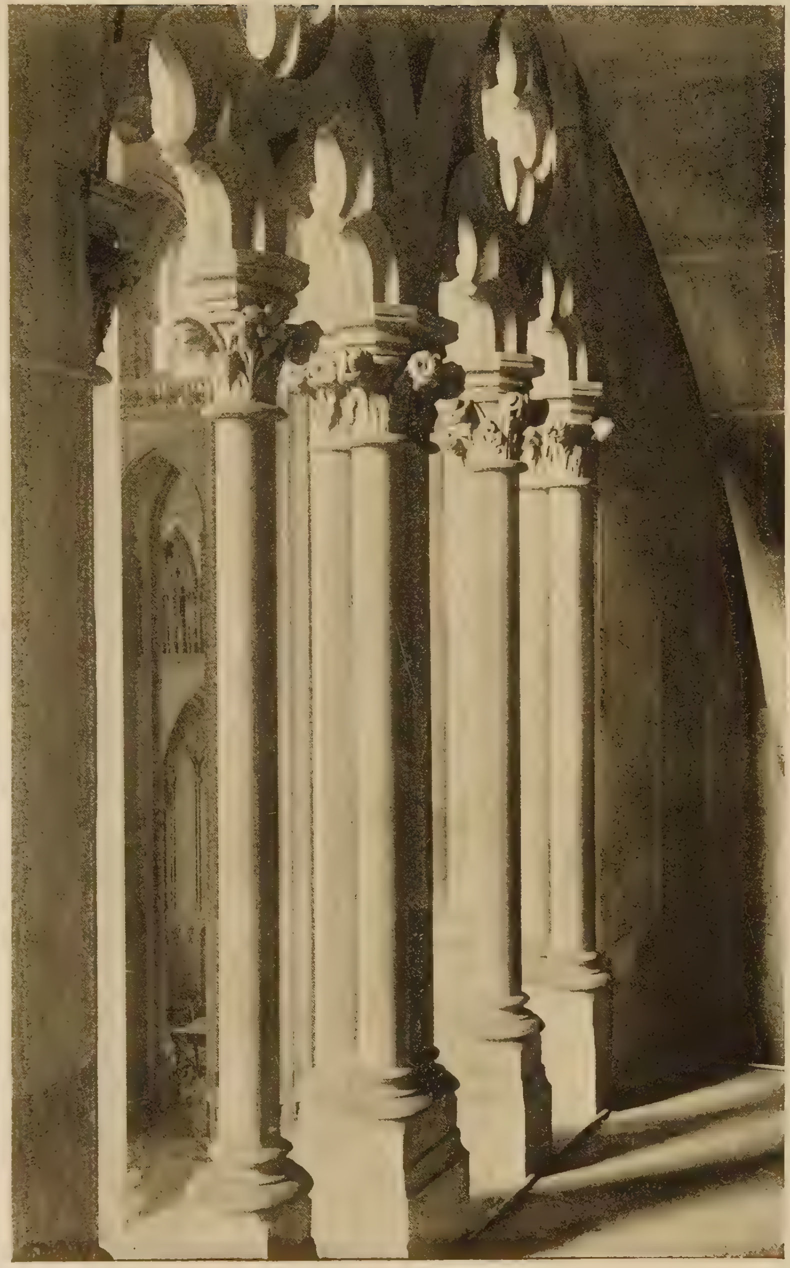
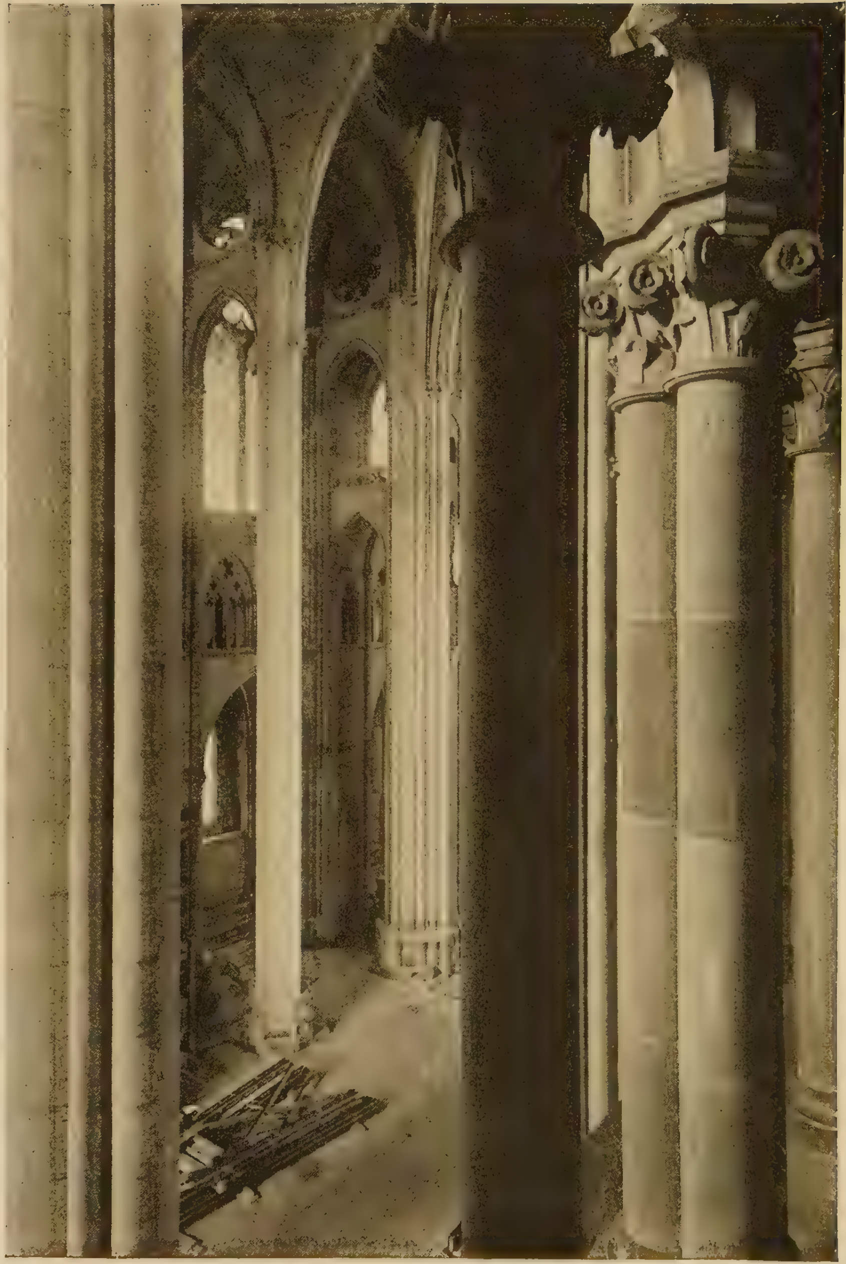


Columns of the Triforium

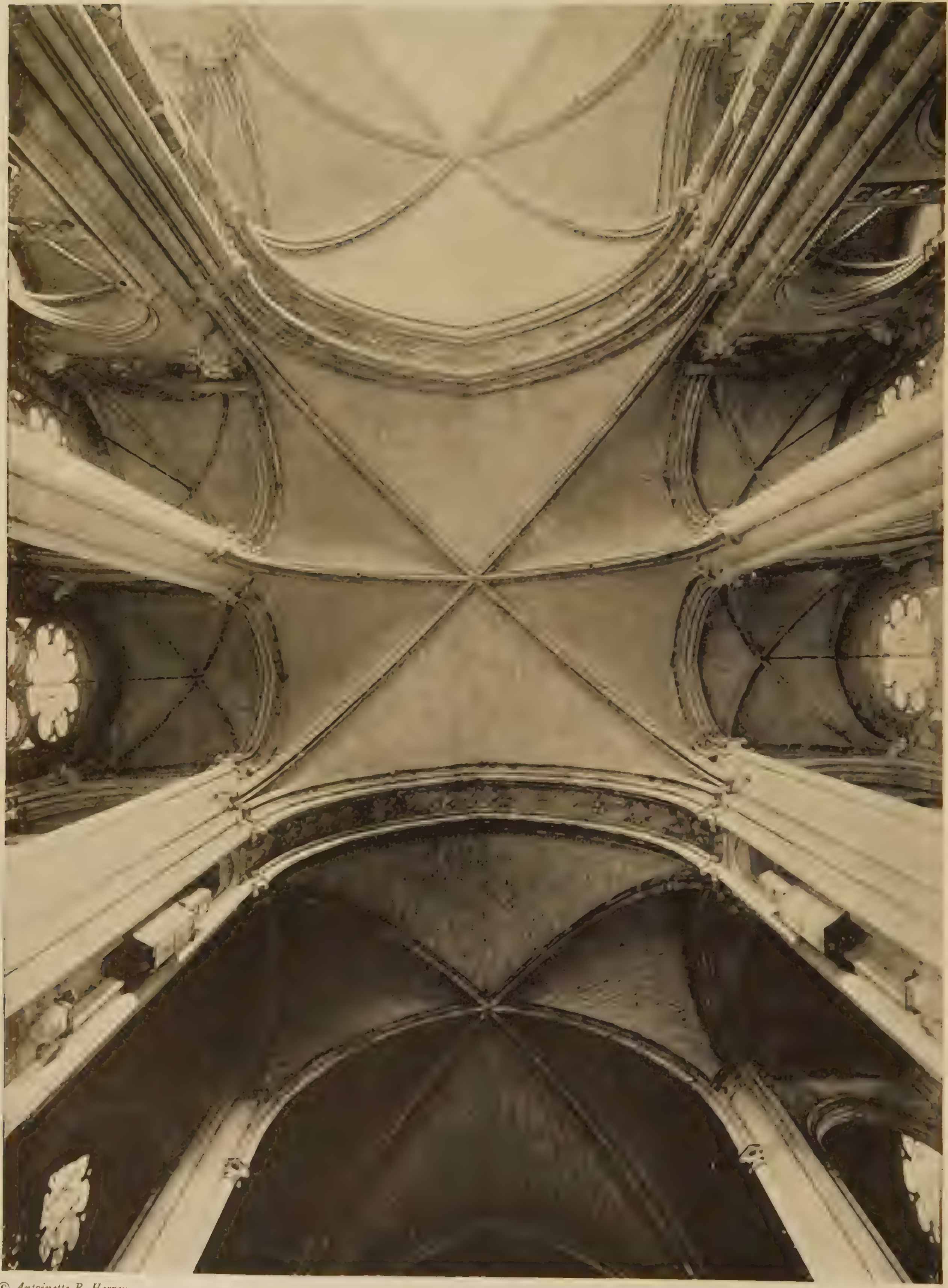
Cathedral
of
St. John
the
Divine,
New York
City

CRAM &
FERGUSON,
ARCHITECTS



Looking from the Triforium into the Nave, showing the alternating large and small columns of the latter

© Antoinette B. Hervey



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Vaulting of the Nave

CATHEDRAL OF ST. JOHN THE DIVINE, NEW YORK CITY

CRAM & FERGUSON, ARCHITECTS

EDITORIAL COMMENT

THE METROPOLITAN EXHIBITION

THE exhibition now being held in the Metropolitan Museum of Art, "The Architect and the Industrial Arts—An Exhibition of Contemporary American Design," has surely not lacked in the primary requisite of a popular exhibition—the power of drawing people to see it. Indeed, so great were the crowds pressing for a glimpse of what the architects have done in the way of contemporary interior settings that the glimpse has been obtained at times only amid surroundings that resembled a subway rush hour. The comment that one hears from the throng is, for the most part, either strongly for or strongly against the results; there is little evidence of unbiased neutrality among the spectators. Comment from the more sophisticated, the professional critics, on the other hand, has been more of the "yes and no" order. Which latter is perhaps what might be expected. In the realm of design it seems quite plain that we are in a state of flux; we are striving for something without being entirely clear in our own minds as to just what it is. We are on our way. We have certainly not arrived at a position where we may consolidate our forces and form a definite line of battle. The movement is as yet too fast to permit of much reasoned analysis.

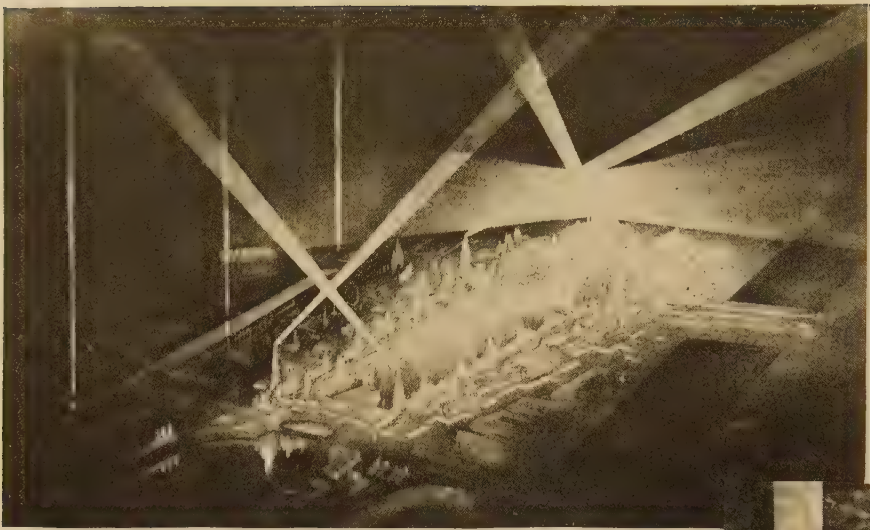
Mr. H. W. Kent, secretary of the Metropolitan, does call attention very pertinently, in a recent issue of the Museum's *Bulletin*, to one objective that has been achieved. The status of the American designer, whether in textiles, ceramics, furniture or what not, has been deplorable. Traditionally, and through lack of coöperation with American manufacturers, and perhaps partly through insufficient training, he was counted out of the contest with the well-knit combinations across the sea. The Museum, seeing this, attempted to show what might happen if the American designer could in some way occupy a position of authority. It substituted the architect for the commercial designer for the present occasion, relying upon his stronger position relative to the manufacturing world, his first-class training, his knowledge of the problem set. Immediately the whole situation was changed. The manufacturers eagerly turned their combined efforts toward giving the architect what he wanted, confident that he would produce a result that could hold its own in comparison with what is being done abroad. The Metropolitan authorities have proven their point, that our great need is for better designers who can command the respect and confidence of the manufacturer and the public. What shortcomings the exhibition may have—and we think the designing architects themselves would agree upon this—are due to the facts that the architect was employed in problems that were in large part outside of his accepted field, and at a time when, as it happens, his aims are more diverse and his goals more in process of moving farther away into the haze than has been the case in several generations.

> *There is not a building in the world upon which the historian may point the finger and say—"Here such a style of architecture began."*
>
> H. HEATHCOTE STATHAM

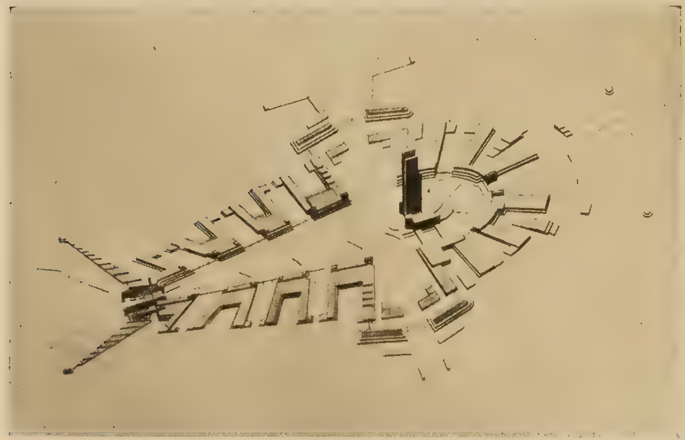
GETTING THE JOB

THERE have been many and diverse ways of securing an architectural commission, one of the earliest of which was practised by one Dinocrates, an architect of Macedonia. Hearing that Alexander intended to lay out his new city, and the usual letters to influential friends having proven futile, Vitruvius tells us that "he had recourse to his own efforts. He was of very lofty stature and pleasing countenance, finely formed, and extremely dignified. Trusting, therefore, to these natural gifts, he undressed himself in his inn, anointed his body with oil, set a chaplet of poplar leaves on his head, draped his left shoulder with a lion's skin, and holding a club in his right hand, stalked forth to a place in front of the tribunal where the king was administering justice." Upon being asked his identity by the king, he put forward a scheme "for shaping Mount Athos into the statue of a man, in whose left hand I have represented a very spacious fortified city, and in his right a bowl to receive the water of all the streams which are in that mountain, so that it may pour from the bowl into the sea." Alexander pointed out a few difficulties with the scheme itself but engaged Dinocrates as his architect and later gave him the job of building Alexandria.

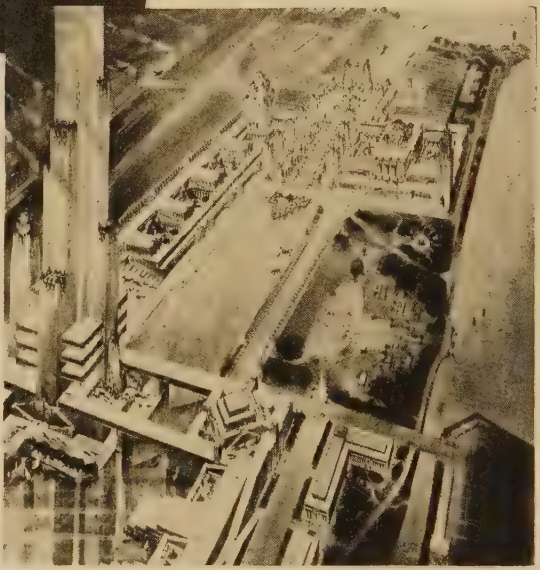
CHICAGO WORLD'S FAIR



Scheme submitted by Harvey Wiley Corbett. One great basin as a central motive, terminated by a dominating composition of a tower and radiating structures

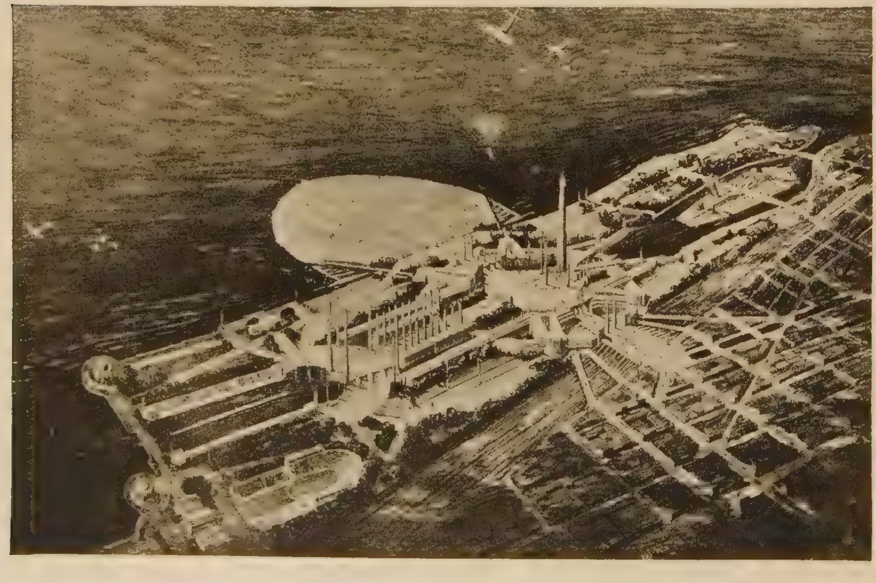


Scheme submitted by John A. Holabird. Major elements of water on the main axis, with a cross axis at 23d Street, and a radial system from the dominant tower



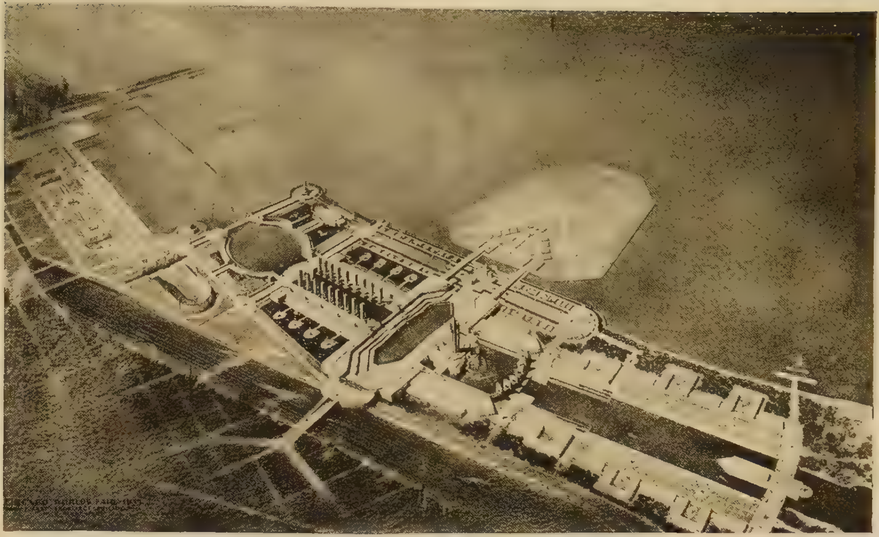
Scheme submitted by Raymond M. Hood. Two basins with a dominant tower placed off centre, thus inducing individuality in all elements

Members of the Architectural Commission have reached a second stage in the preparation of the general plan. Originally, each architect submitted his individual idea of the general scheme. After comparison and discussion of these, each member submitted a second plan, shown herewith, conforming more nearly to the general consensus of opinion.



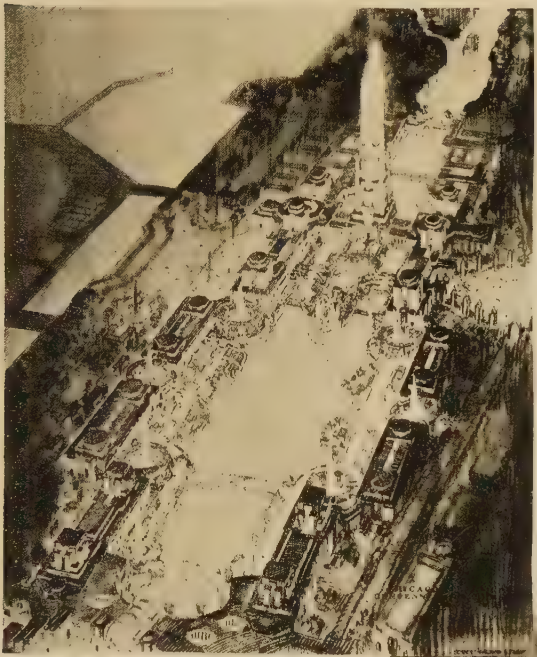
Scheme submitted by Ralph T. Walker. Providing for a great plaza at the 23d Street intersection of the two axes, with a deliberate acceptance of acute angles governing the buildings

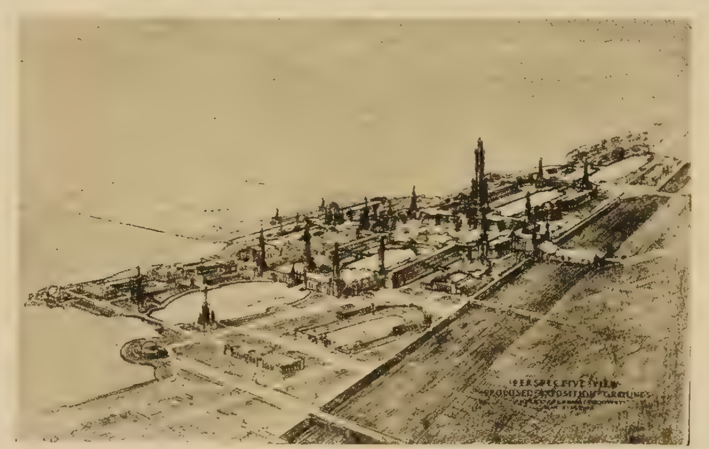
Centennial Celebration of 1933



Scheme submitted by Paul P. Cret. Employing five great basins. There is a tower on the main longitudinal axis, and the transverse axis is also of great importance

Scheme submitted by Edward H. Bennett. A central element of water, the main axis dominated by a tower rising from an island opposite 23d Street

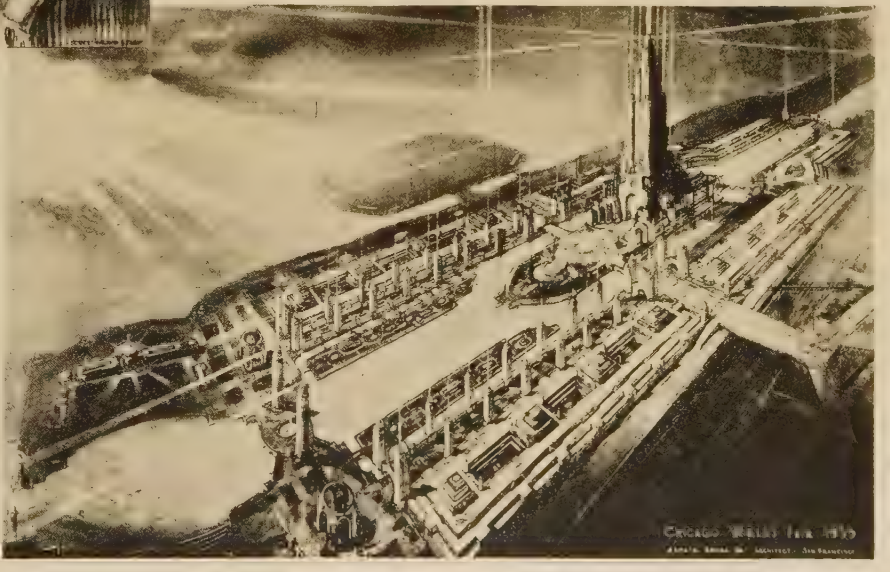




Scheme submitted by Hubert Burnham. Marked again by the employment of many basins and by minor repetition of the vertical motive set by the main tower

For the third step, these plans have been turned over to Paul P. Cret, who will attempt a composite plan, utilizing the best elements of all, as nearly as may be practical.

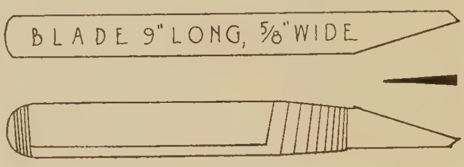
Financial arrangements have been perfected. General Charles G. Dawes is chairman of the Finance Committee.


CHICAGO WORLD'S FAIR 1933
ARTHUR BROWN JR. ARCHITECT · SAN FRANCISCO

Scheme submitted by Arthur Brown, Jr. The dominating tower rising from an island opposite 23d Street. The major basin is flanked with formal gardens

The Architectural Clinic

ON A GOOD WEAPON FOR THE DRAFTING-ROOM

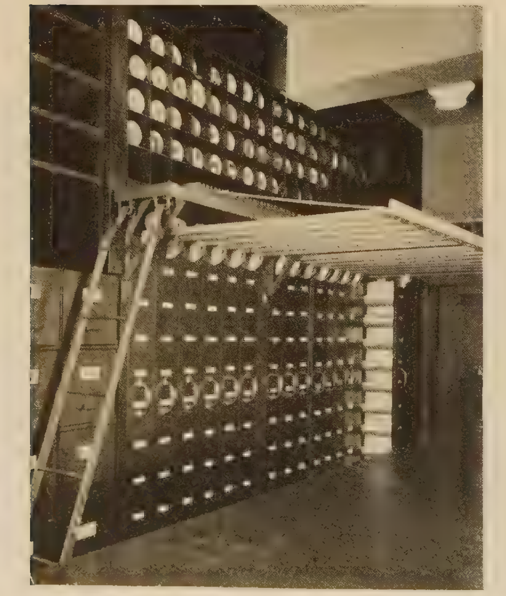


ABOUT the only conscience-free time which the draftsman has to sharpen his knife is when the head of the office has been securely stowed on a boat bound for foreign dentils. About the easiest article to lose in some confrère's pocket is the draftsman's knife. Taking these two facts into consideration, we think it worth a few inches of type to proclaim the advantages of buying a cobbler's knife (as shown on the left side of the accompanying sketch) for about a quarter or so, wrapping or winding the handle with a strip of detail paper until it is comfortably padded, and gluing down the final edge of paper. In section the blade is an acute wedge (shown solid), being only 1/16 in. at its thick edge. Since it forms a very acute angle, it acts as a cutting edge all the way from front to back edge. Consequently, instead of being like the usual knife-blade, having a narrow cutting edge about 1/32 in. in depth which is sharp at the outset, this blade will so retain its keenness for all drafting-room purposes that it scarcely requires sharpening from the beginning of one year to the next. It is particularly useful for cutting mounts, because the blade is thin and can be grasped with a full fist. We have had one about five years, and to the best of our memory it has been humiliated by an oil-stone only once during that time.

It is needless to point out that a blade 9 in. long, 5/8 in. wide (this seems to be a common size for cobbler's knives), cannot comfortably walk off in any thoughtless one's pocket, nor is it as easily lost in a maze of drawings and crumpled tracing-paper as a conventional pocket-knife.

ON A NEW MEANS OF HANGING DOORS

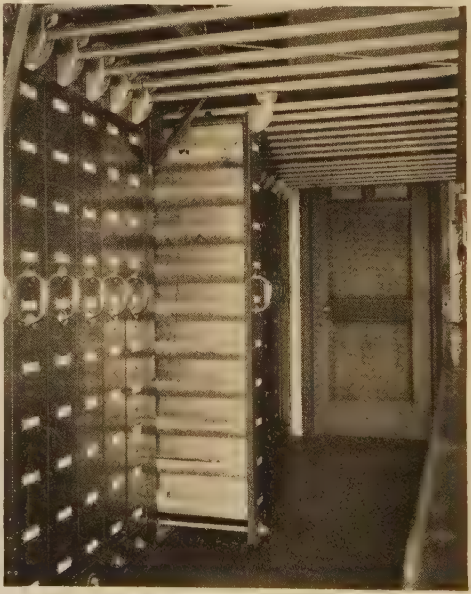
AN English firm has lately produced a time and labor saving product by way of a door which is sent to the building fitted to its frame. Both door and frame are machine-made at the factory, where they are fitted, hinges and locks put in place, and all put in complete readiness to be secured in the opening at the job. The masonry or wood-frame opening need only be approximately right (though not too small). The assembled door and frame are made secure by long screws, wedges, raggle-bolts, etc., depending on the wall material. Holes are provided in the wood or metal frame so that the door casing—whatever the material may be—can be screwed in place, thus covering up in the usual manner all wedges and space between frame and wall. The average saving in England is about $2.50 per door.



A filing system for drawings in rolls—in the office of Schultze & Weaver, New York

At left, the adaptation of a laundry dryer to filing purposes, with finished-iob rolls stored above

At right, a section opened, to show the troughs of galvanized metal holding rolls of drawings



A Restaurant in the Air

A CLASS A PROJECT OF THE BEAUX ARTS INSTITUTE OF DESIGN—SOME OF THE FIRST AND SECOND MEDAL AWARDS

IT is a fact rather well known in the profession that the architectural students of to-day are no longer spending much of their time upon traditional forms. Just how far away they do roam upon occasion is indicated in a recent project.

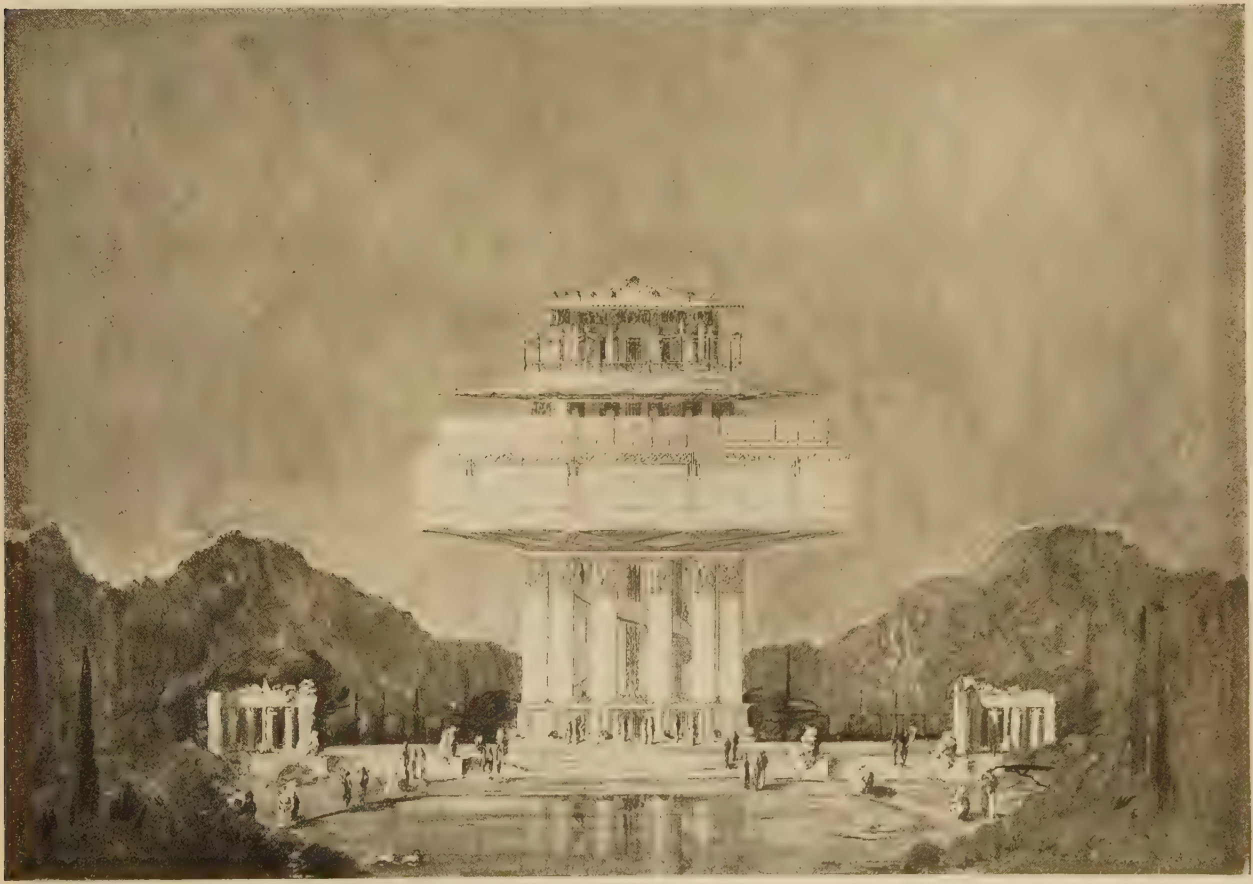
The programme was designed to give a free rein by setting a problem that could not well be solved by a use of the orders:

"Among the people who do not regard eating as a business, there have always been those who have enjoyed a restaurant perched high above the ground. Many of our skyscrapers devote the upper floors to restaurants. There is one on top of nearly every mountain in Switzerland. In the Paris Exposition two great towers were built, whose tops were restaurants and Robinson's outside of Paris, with its eating places up in trees, has long been famous.

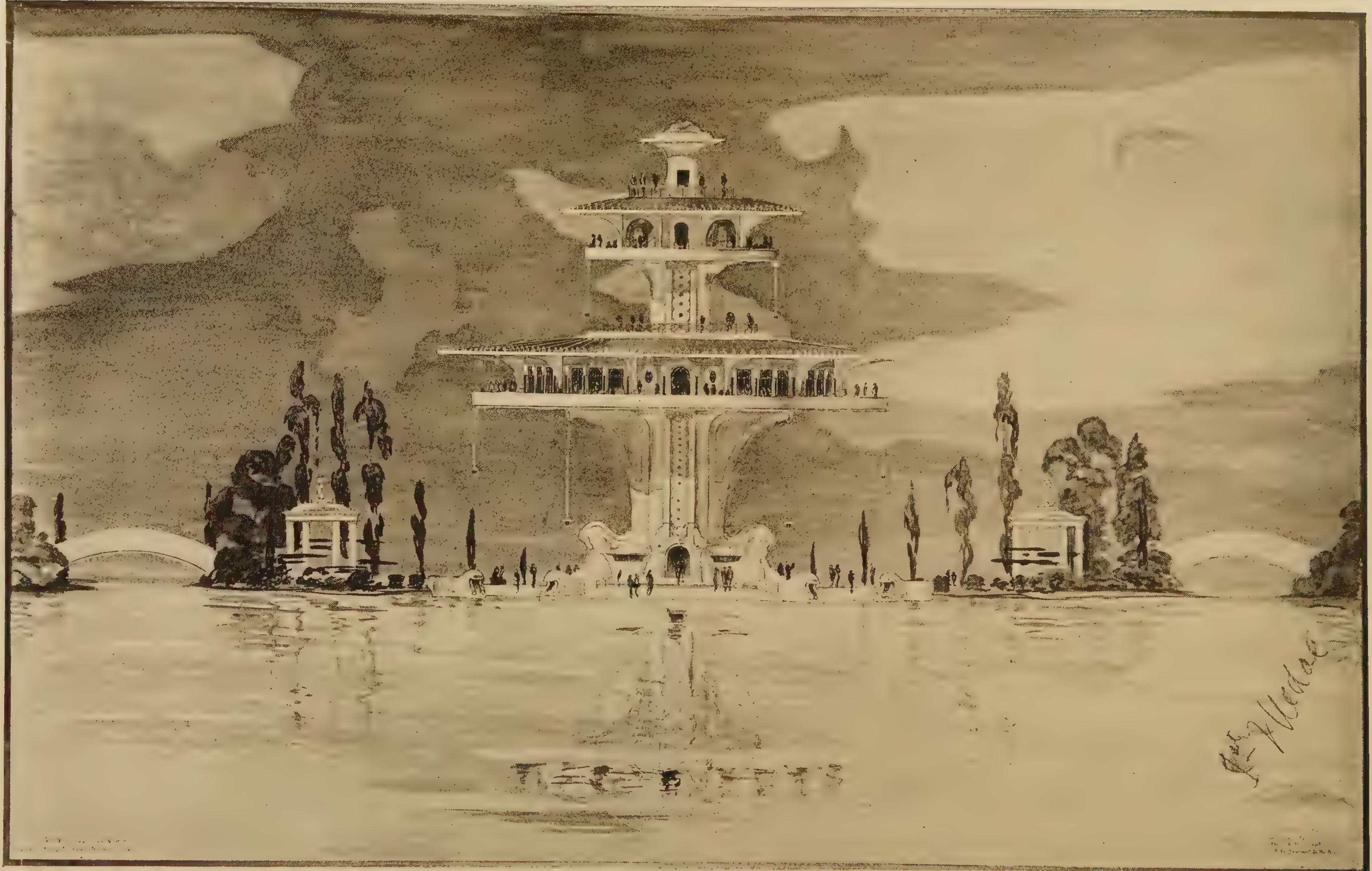
This problem is to design a restaurant in the air in a park that unfortunately has no elevation from which one can get a view of the surrounding landscape. All that is required on the ground level is an enclosed vestibule for clients, connected with the restaurant by two or three elevators, a staircase, and an entrance for the service. This last feature consists merely of a room, approximately 200 square feet in area, connected with the kitchens above by a service elevator, and service stairs.

The restaurant itself shall be on two levels, the lower one of which is to be 50 feet above the ground, so that the view will clear the treetops. A topmost level may be devoted to an observation platform or a tea terrace. . . . In the study of this problem, the students should remember that the unusual developments of steel and reinforced concrete make possible this type of structure."

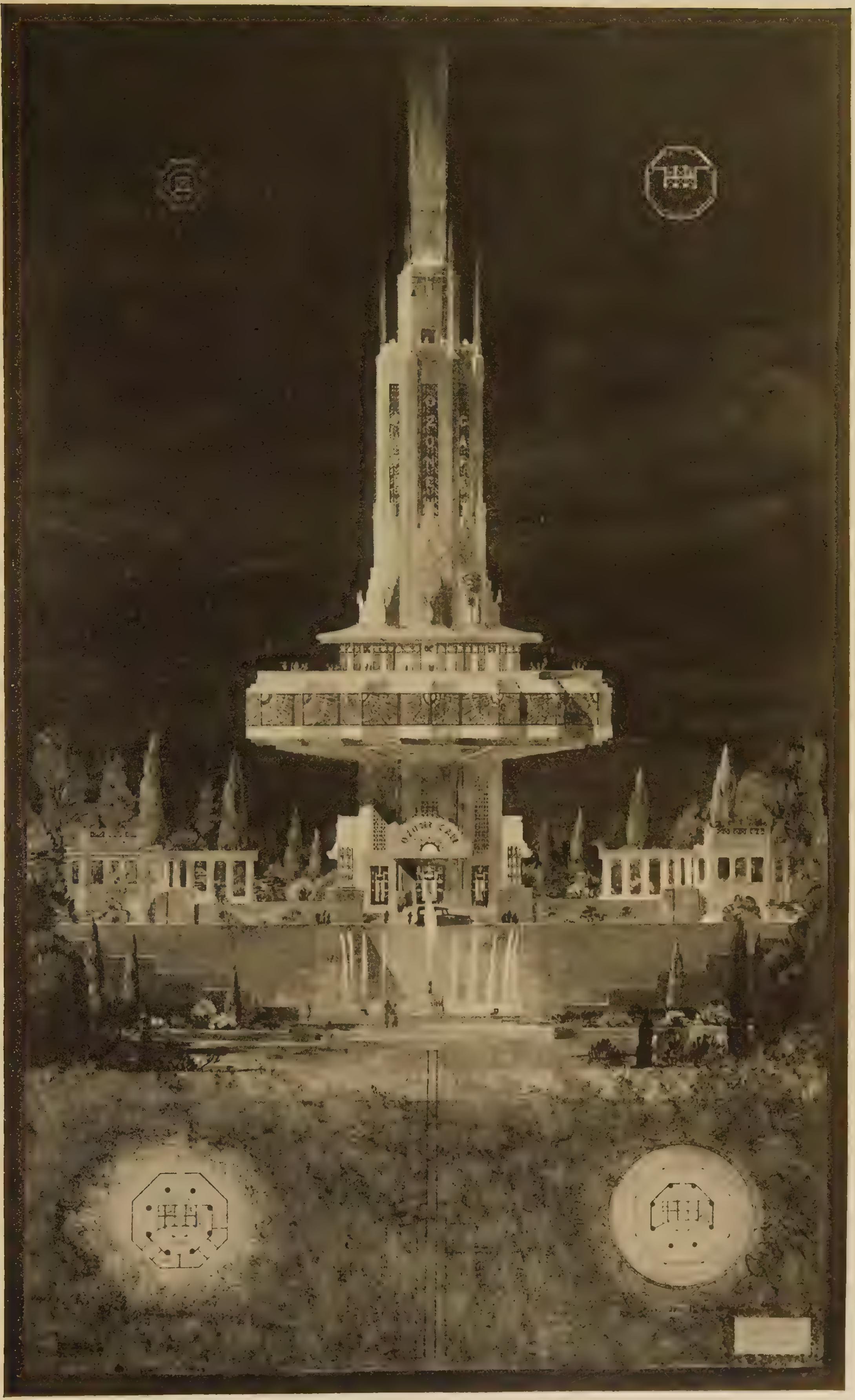
With the students of to-day setting the pace indicated by the accompanying drawings, there is hope for the architecture of to-morrow.



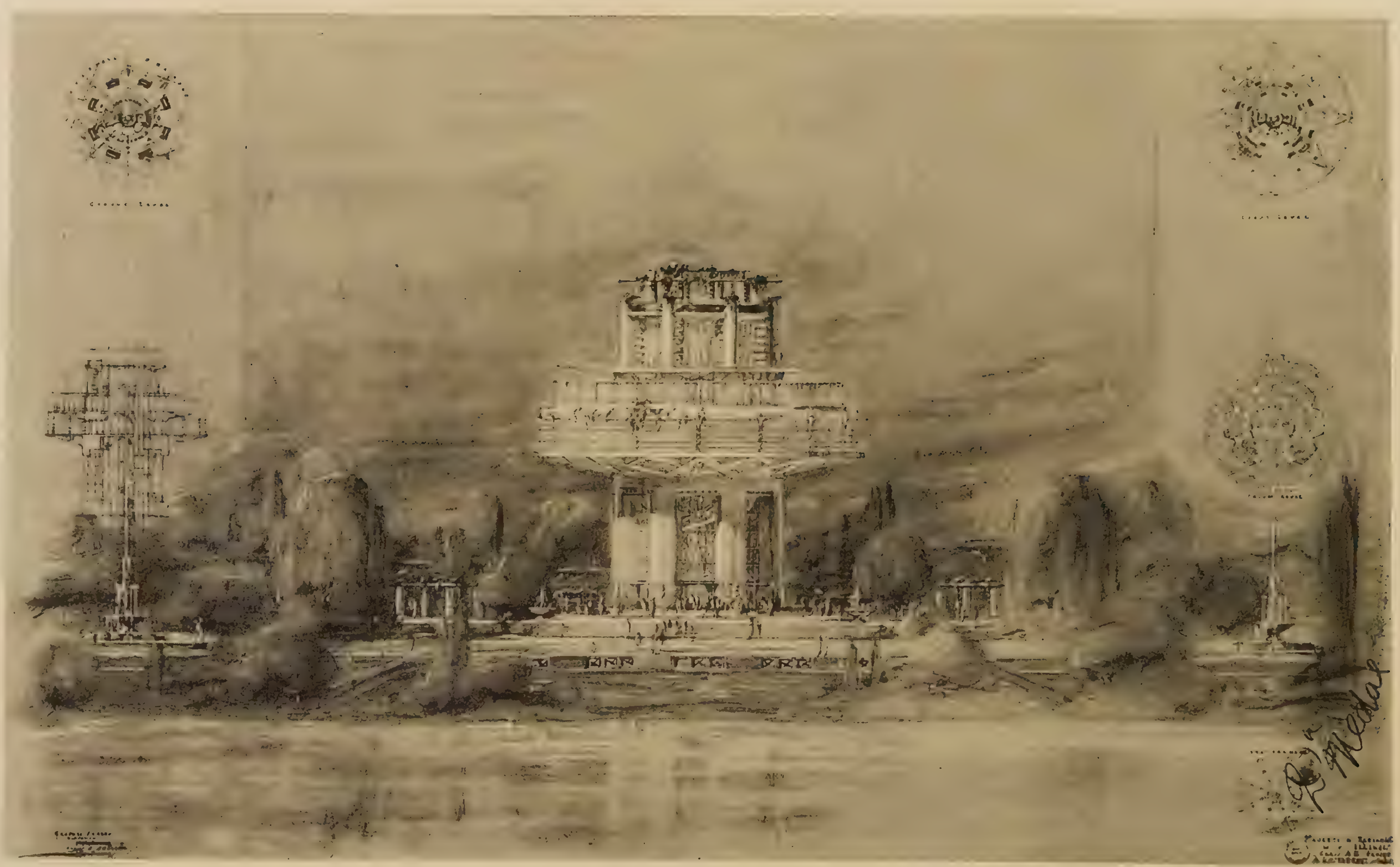
Max Abramowitz, University of Illinois. (*A First Medal*)



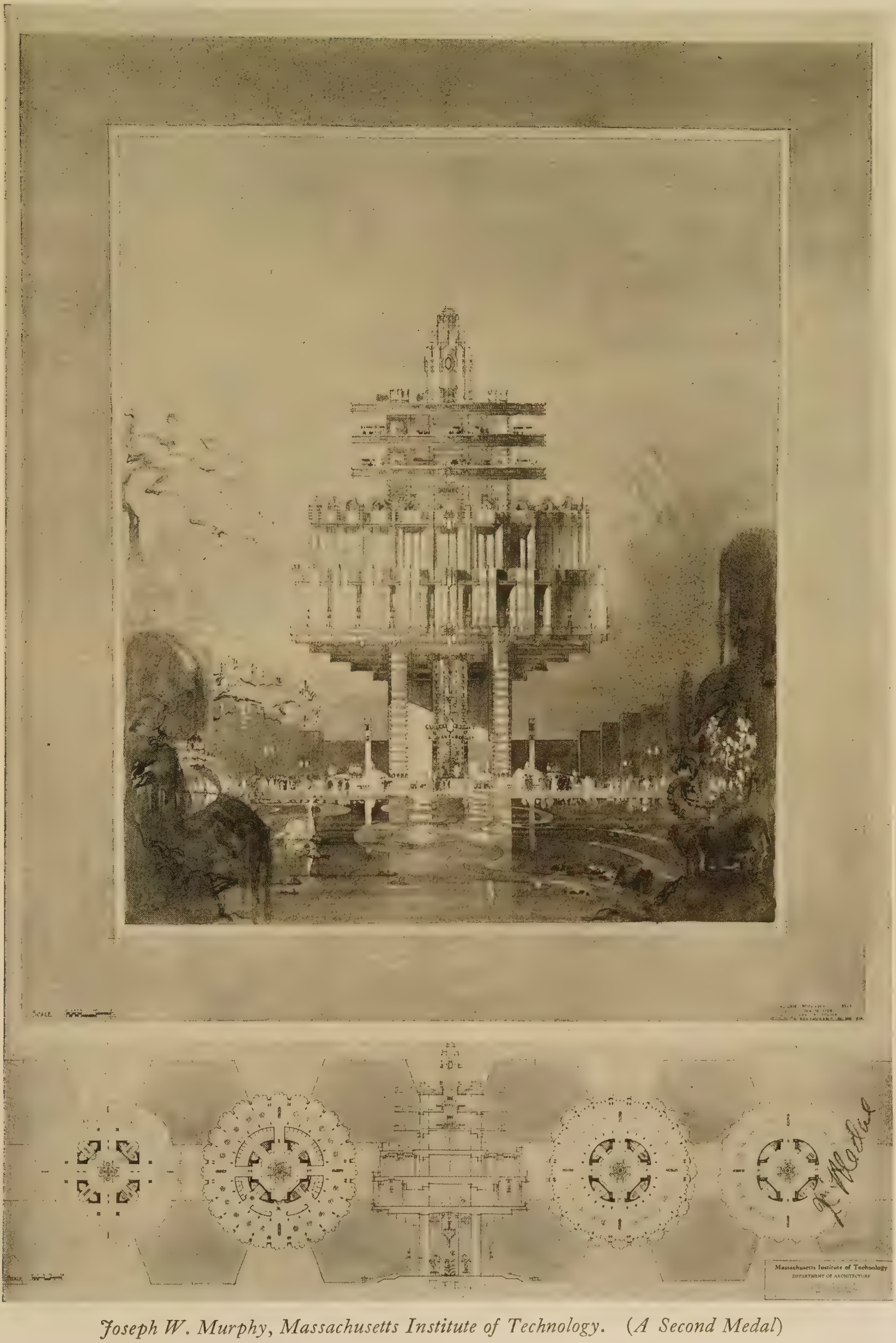
Julian H. Whittlesey, Yale University. (A First Medal)



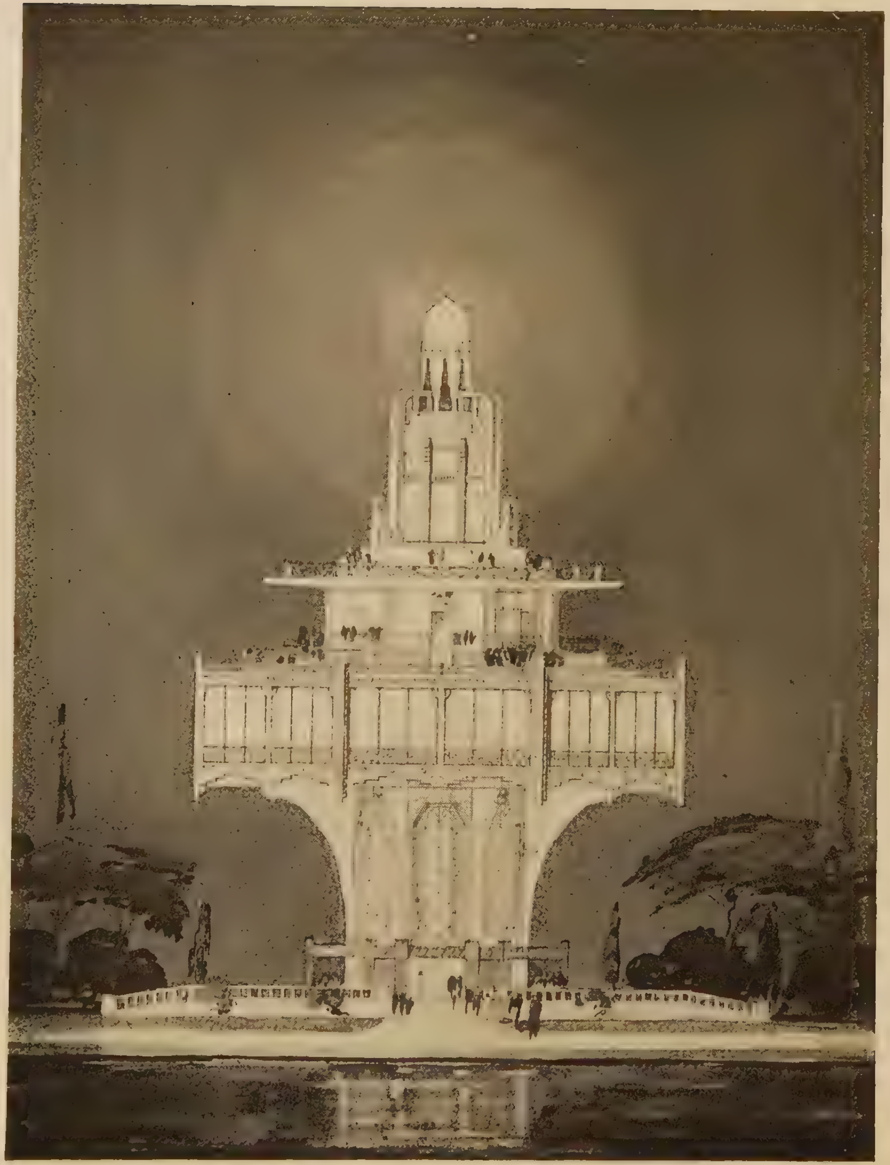
J. A. Hearon, Jr.
Georgia School of Technology.
(A Second Medal)



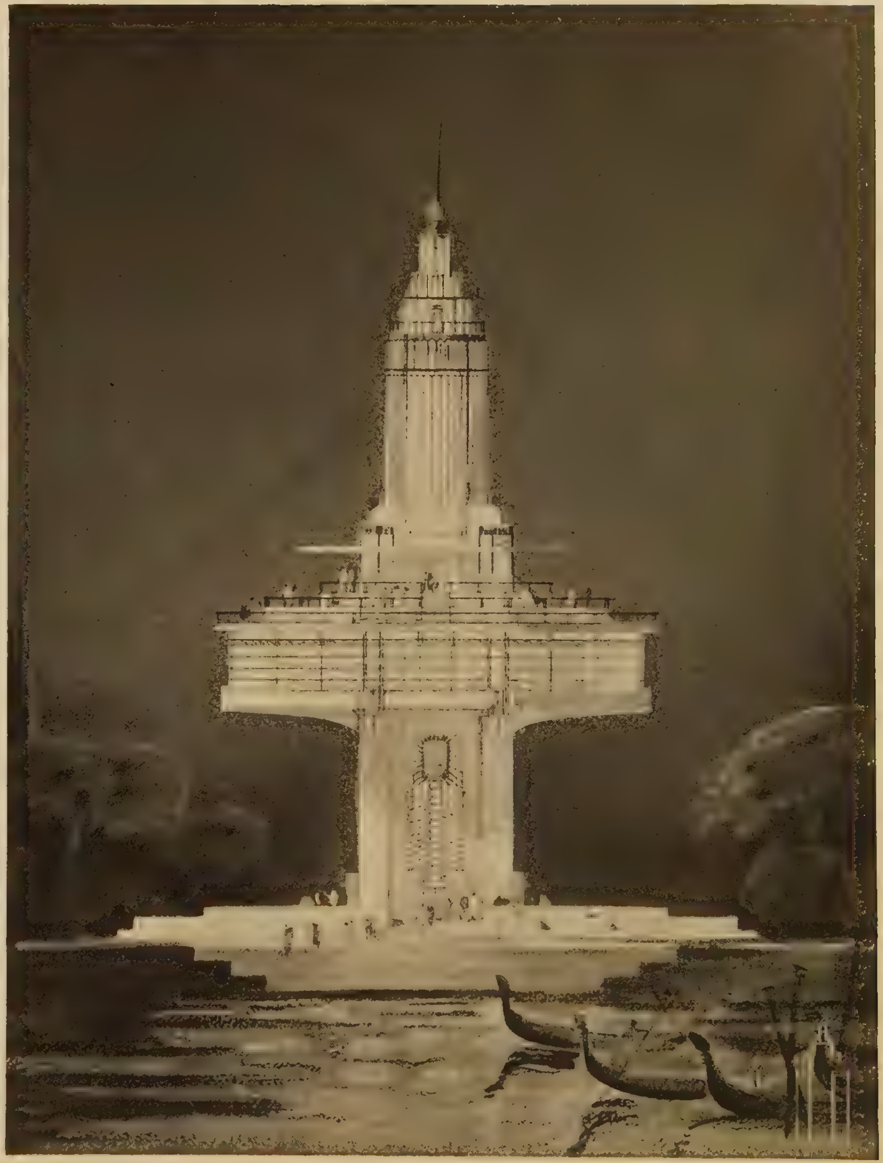
Maurice W. Kleinman, University of Illinois. (*A Second Medal*)


SCALE
SCALE
Massachusetts Institute of Technology
DEPARTMENT OF ARCHITECTURE

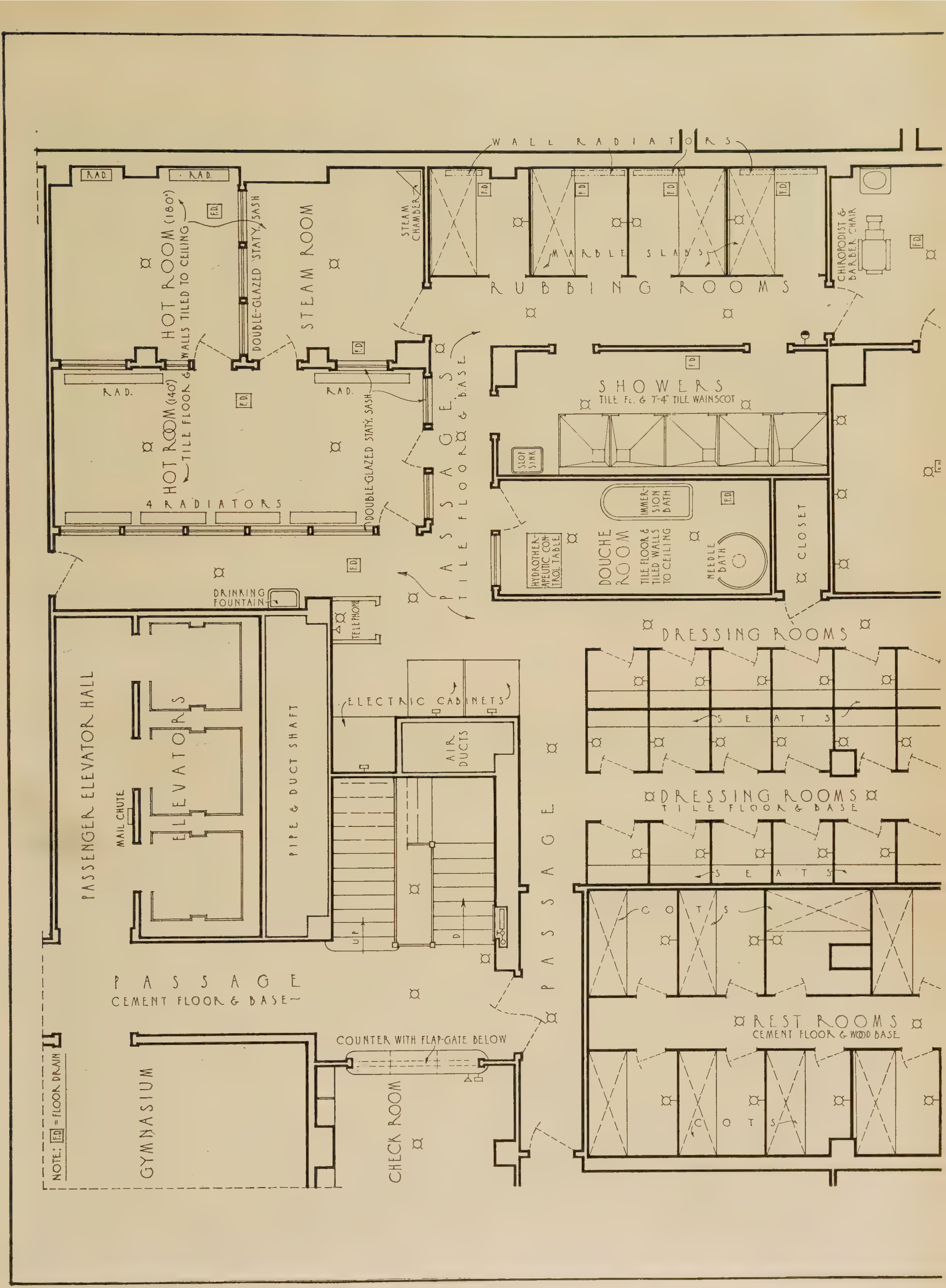
Joseph W. Murphy, Massachusetts Institute of Technology. (A Second Medal)

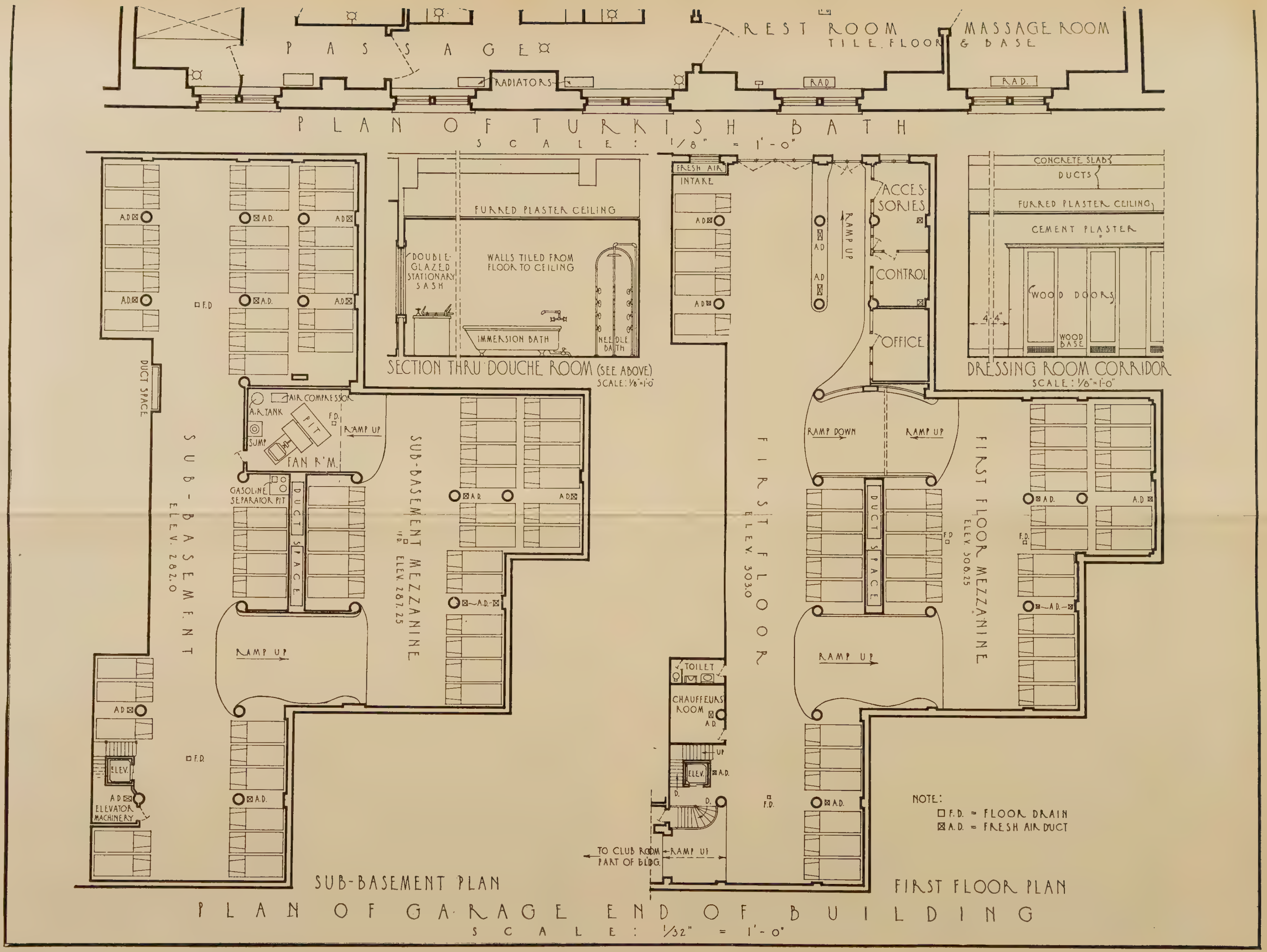


Arndt F. Ericksen, Armour Institute of Technology. (*A Second Medal*)



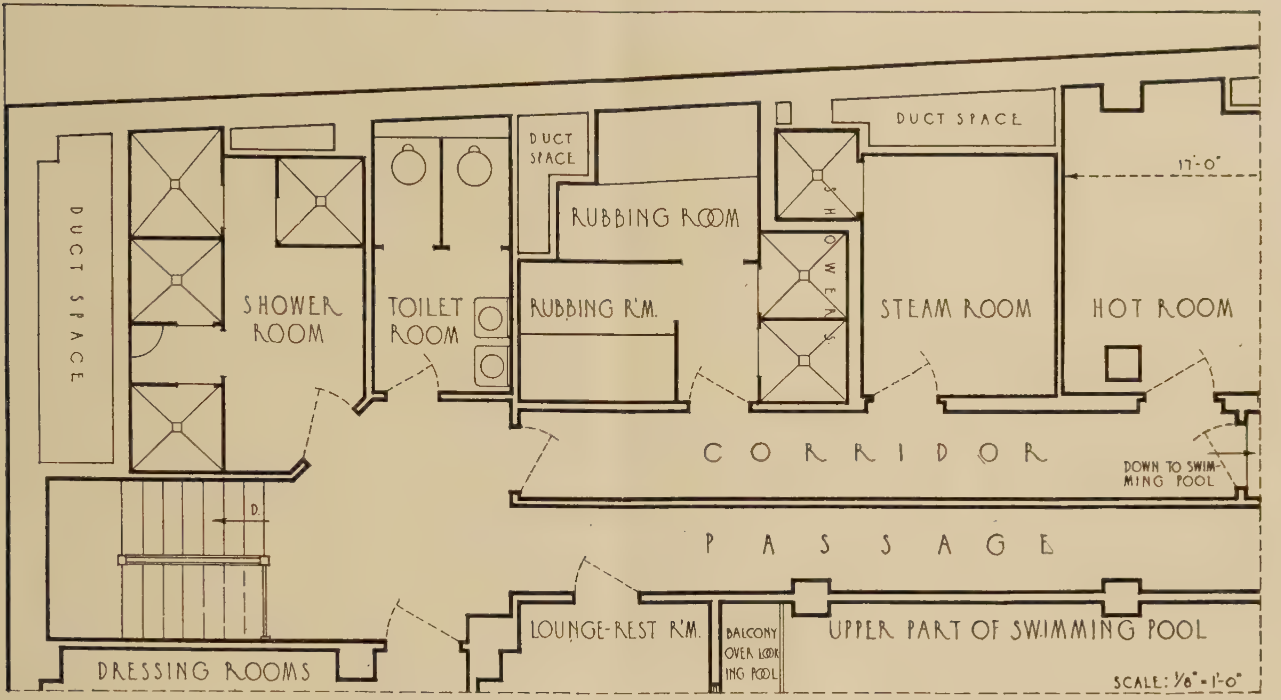
Charles P. Ware, Armour Institute of Technology. (*A Second Medal*)


WALL RADIATORS
RAD.
RAD.
HOT ROOM (180°)
WALLS TILED TO CEILING
DOUBLE-GLAZED STATY. SASH
STEAM ROOM
STEAM CHAMBER
MARBLE SLABS
RUBBING ROOMS
CHIROPODIST & BARBER CHAIR
F.D.
RAD.
HOT ROOM (140°)
TILE FLOOR &
RAD.
DOUBLE-GLAZED STATY. SASH
4 RADIATORS
PASSAGE
TILE FLOOR & BASE
SHOWERS
TILE FL. & 7'-4" TILE WAINSCOT
SLOP SINK
IMMERSION BATH
DOUCHE ROOM
TILE FLOOR & TILED WALLS TO CEILING
HYDROTHERAPEUTIC CONTROL TABLE
NEEDLE BATH
CLOSET
DRINKING FOUNTAIN
TELEPHONE
DRESSING ROOMS
SEATS
ELECTRIC CABINETS
AIR DUCTS
PASSENGER ELEVATOR HALL
MAIL CHUTE
ELEVATORS
PIPE & DUCT SHAFT
UP
DN
DRESSING ROOMS
TILE FLOOR & BASE
SEATS
PASSAGE
COTS
PASSAGE
CEMENT FLOOR & BASE
REST ROOMS
CEMENT FLOOR & WOOD BASE
COUNTER WITH FLAP-GATE BELOW
NOTE: F.D. = FLOOR DRAIN
GYMNASIUM
CHECK ROOM
COTS



Plan Details of Turkish Bath and Garage, Jonathan Club, Los Angeles

Schultze & Weaver, Architects



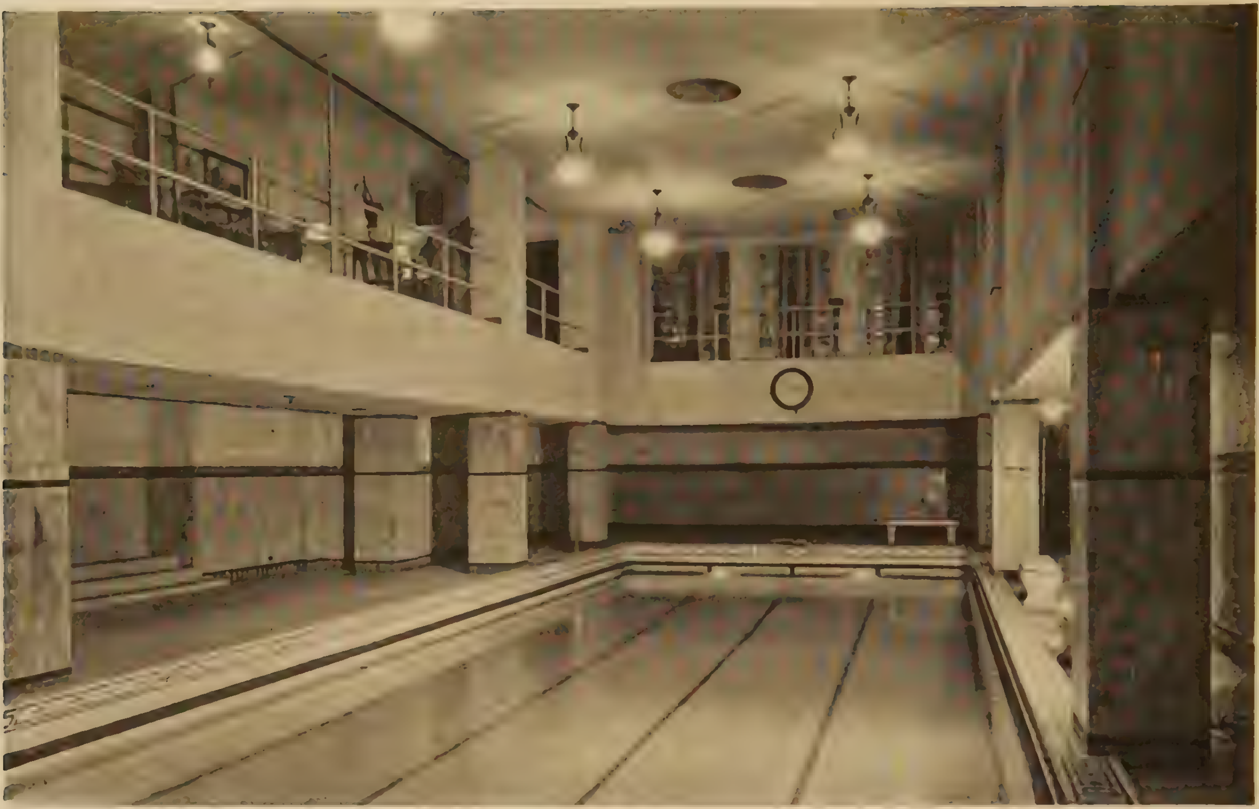
Plan Details of Turkish Bath and Garage, Jonathan Club, Los Angeles (overleaf)
SCHULTZE & WEAVER, ARCHITECTS
Plan Detail of Turkish Bath, Barbizon Apartment-Hotel, New York City (above)
MURGATROYD & OGDEN, ARCHITECTS

Turkish Bath:

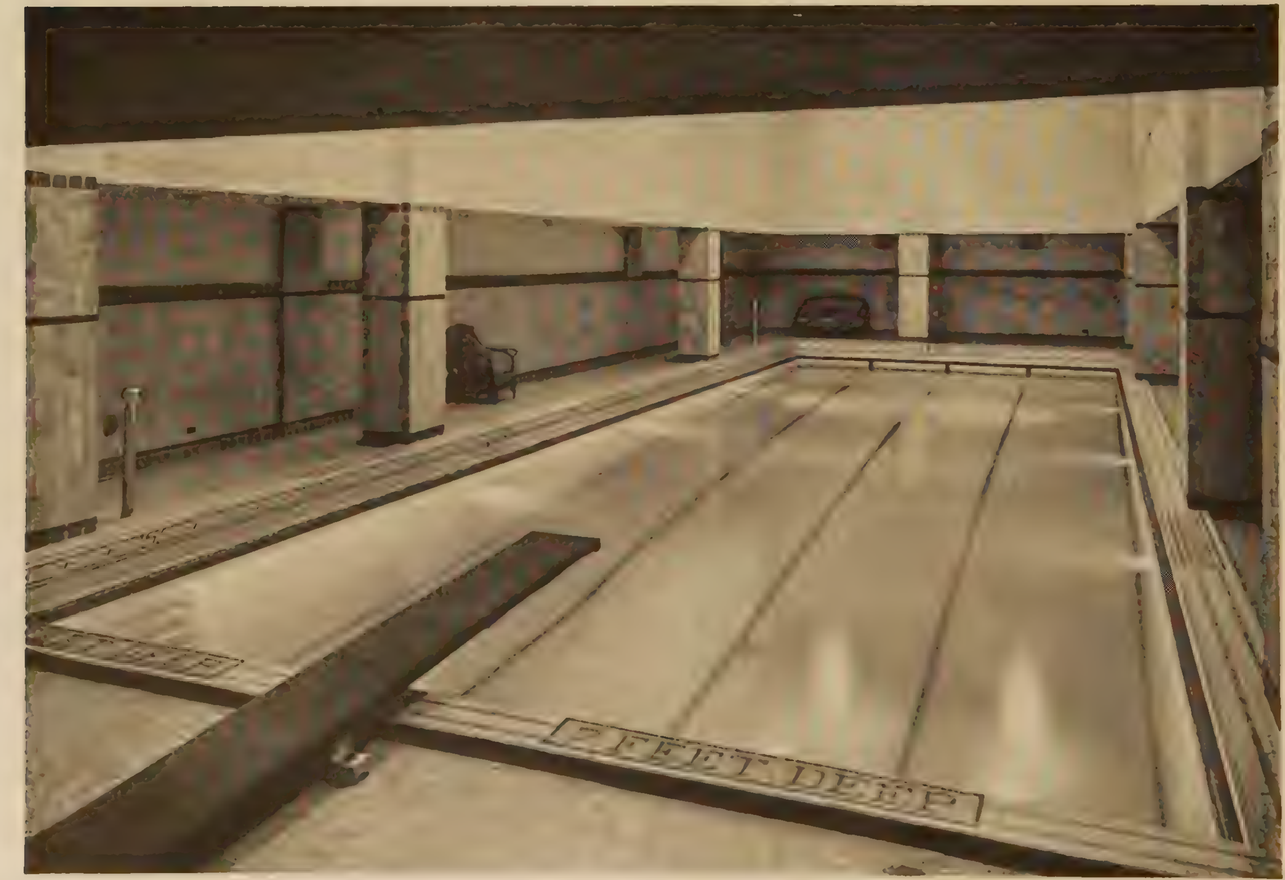
Two general layouts are given for the solution of this problem, the one overleaf on a more elaborate scale than the one above. In general, no matter what the size or how grand the scale, the necessary rooms and their relative sequence are as follows: an entrance hall with a control office and check-room for valuables, dressing-cubicles or booths, one or more hot-rooms, steam-room, rubbing-rooms, shower-room, toilet (somewhere in the plan), cold plunge (optional), and rest-rooms. The number and size of each type of room will be more or less dependent upon the funds available, the number of patrons, and usually the particular desires of the client or committee. In laying out a preliminary scheme, however, a good idea of the characteristic needs and their latitude in size can be determined to a fair degree from the two examples given. Floors are often terrazzo or tile, unless only cement can be afforded; walls in the hot, steam, shower and toilet-rooms tiled from floor to ceiling, or at least to a seven-foot height; floor height of 10′ at least from finished floor to finished floor because of the great depth lost to ventilation ducts, steam coils, etc. Both the materials and design of the rubbing, dressing, and rest-rooms will depend upon the budget and the several preferences of client and architect.

Club-House Garage:

The problem of supplying the modern club-house in a congested district with ample parking space has become one for the architect instead of the town-planner, with the result that some part of the valuable building plot will often be used for this purpose. The solution embraced by the Jonathan Club, Los Angeles, devotes the rear and least desirable portion of the plot to garage space on each floor, with ramps connecting floors. The plan overleaf appears simple enough on the surface, but analysis shows that the architects have utilized the irregular space available in the most advantageous manner by placing the ramps as near the centre as possible, thus dividing the parking space on the typical floor so that three groups of cars are about equally divided and equally accessible. While this is a particular solution for an irregular plot, the scheme of a double ramp is applicable to almost any space unless it be greatly restricted so that only a single ramp be possible. The height from floor to floor is 10′ 6″. Care must be exercised so that the proper turning radius for long cars is taken into account.

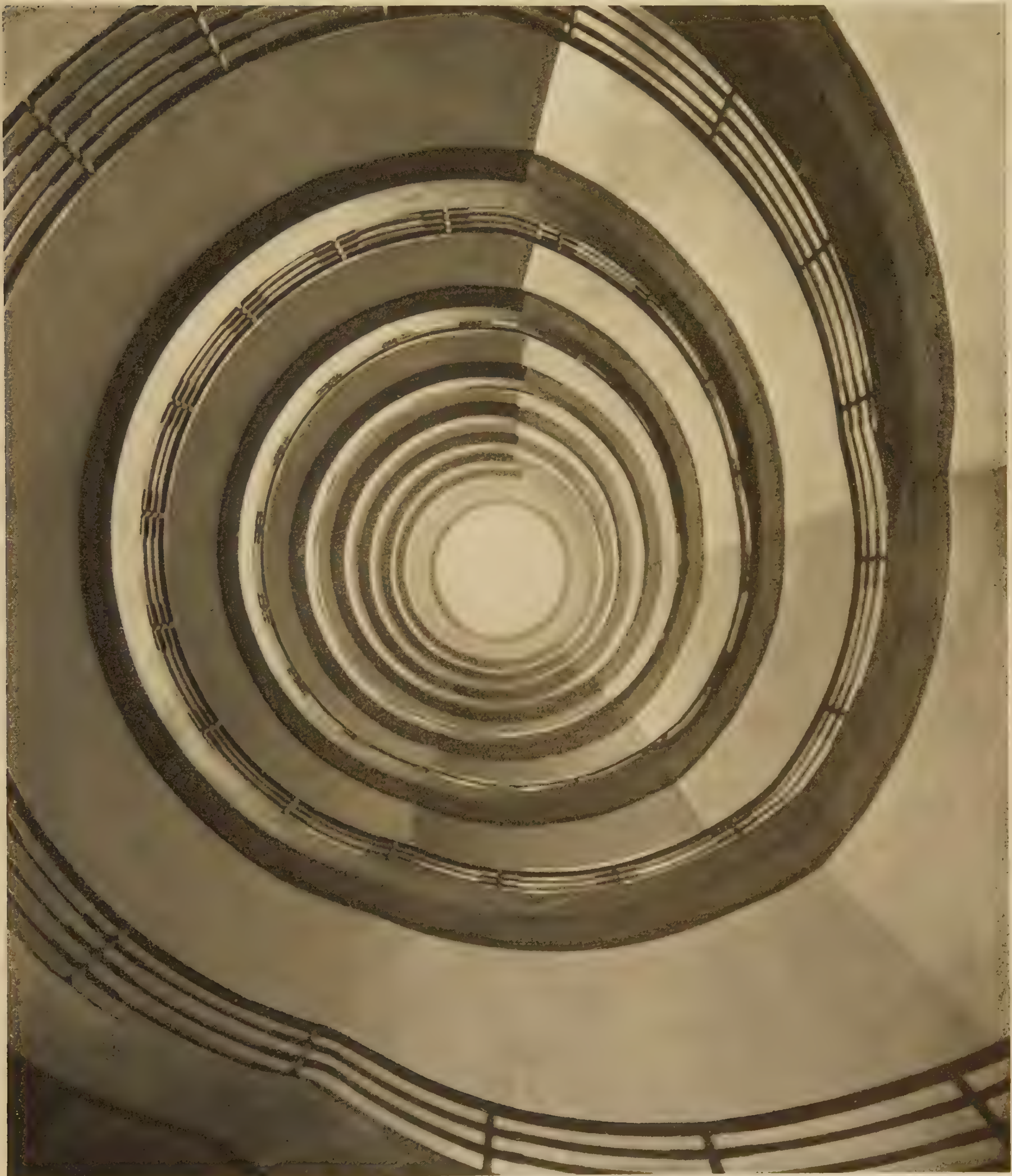


Swimming-pool in connection with Turkish baths, Barbizon Apartment-Hotel, New York City. Murgatroyd & Ogden, Architects. (See opposite page)

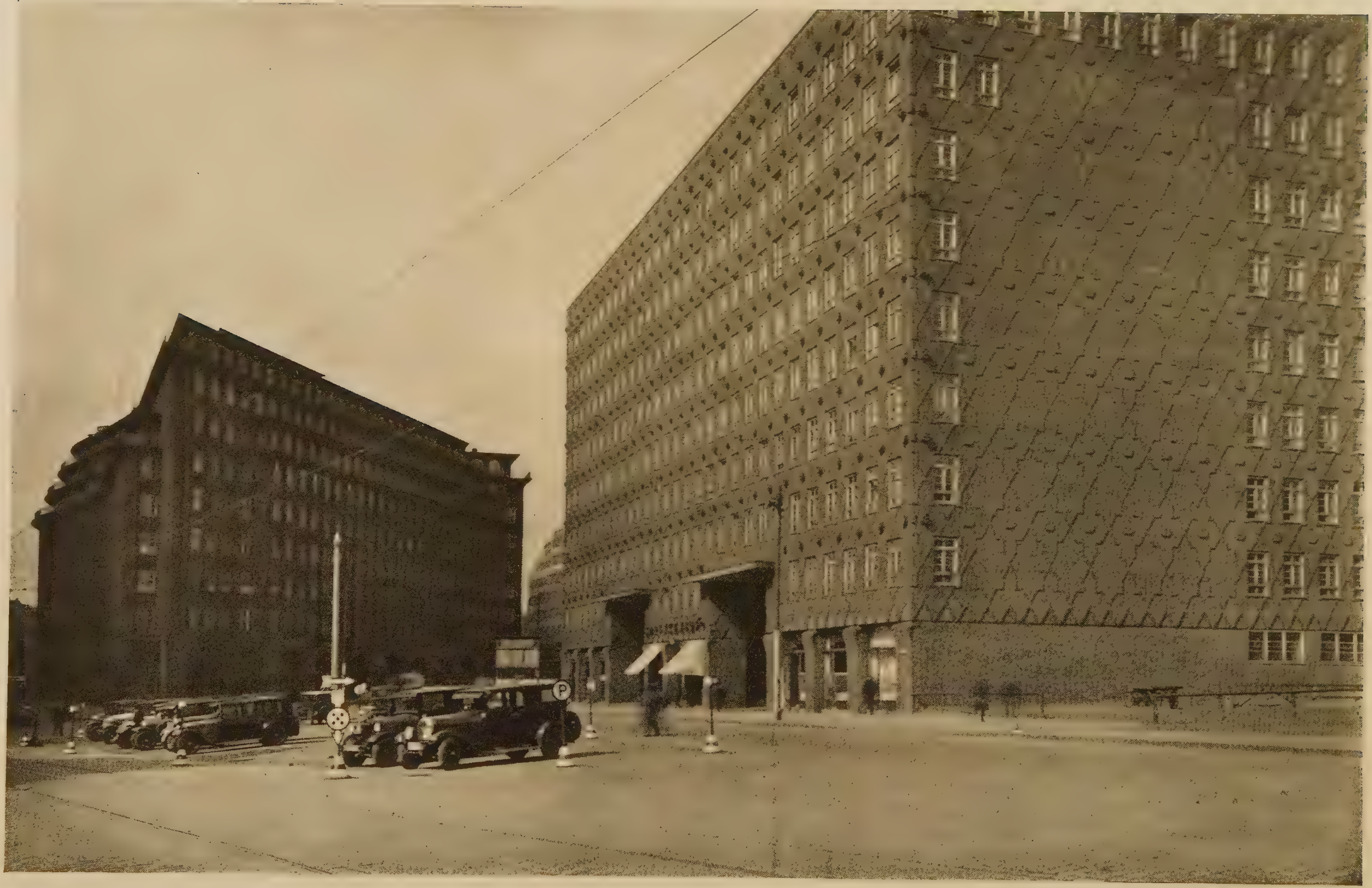


A Pictorial Review of Modern Architecture in Europe

By F. R. YERBURY, Hon. A. R. I. B. A.

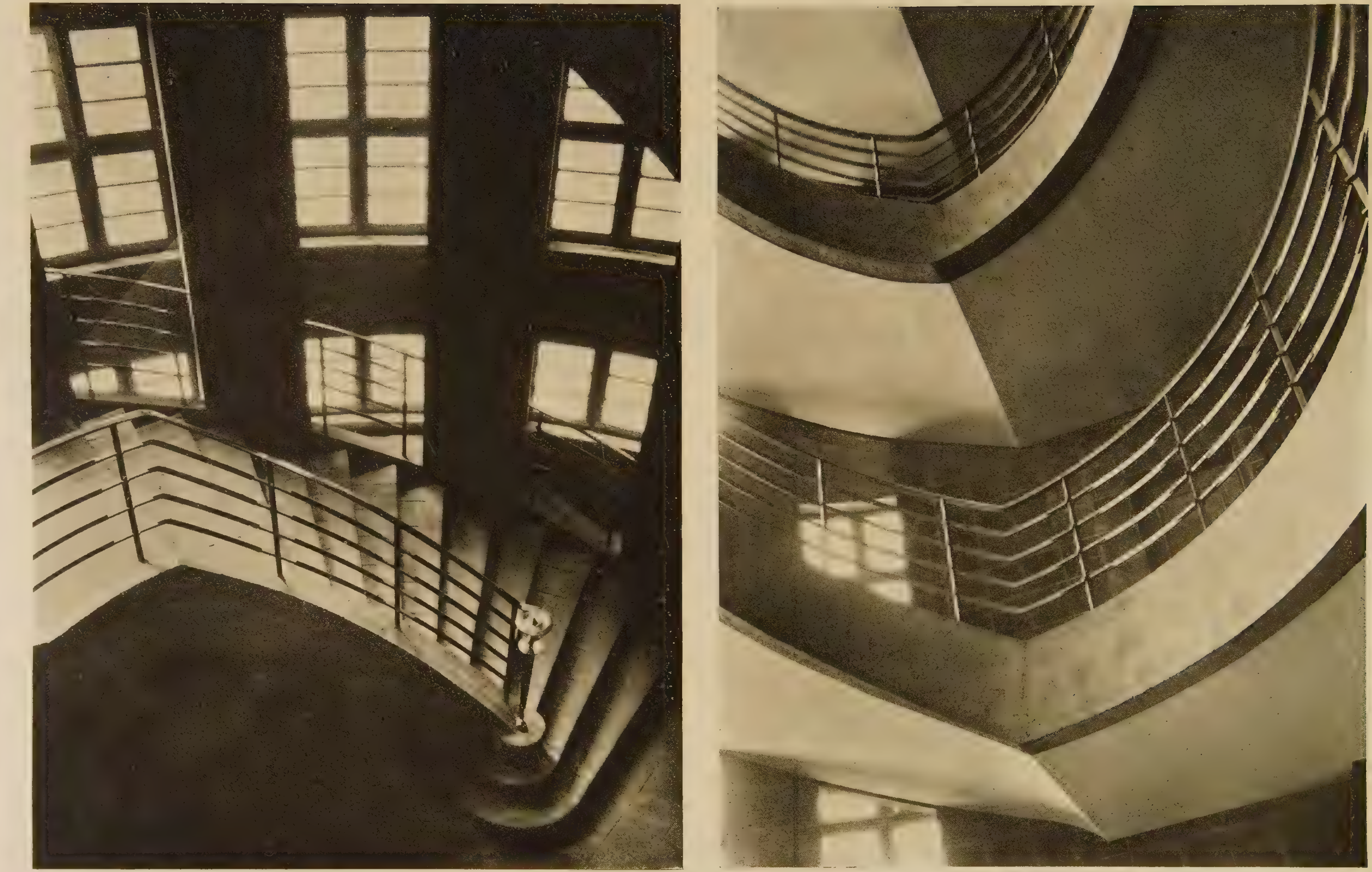


Staircase, The Sprinkenhof, Hamburg, Germany *Fritz Höger and O. Gerson, Architects*

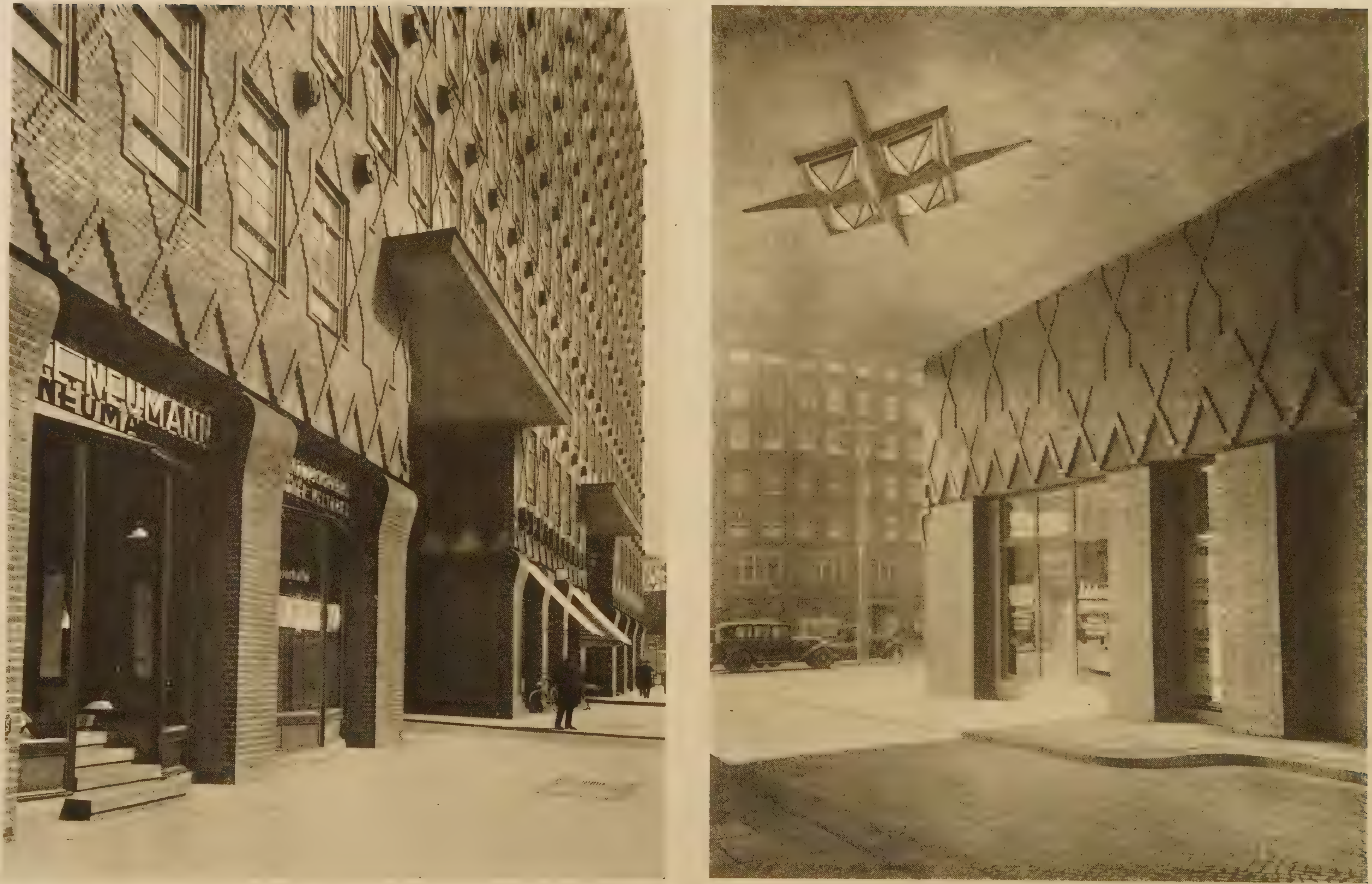


The Sprinkenhof (at right), Hamburg, Germany

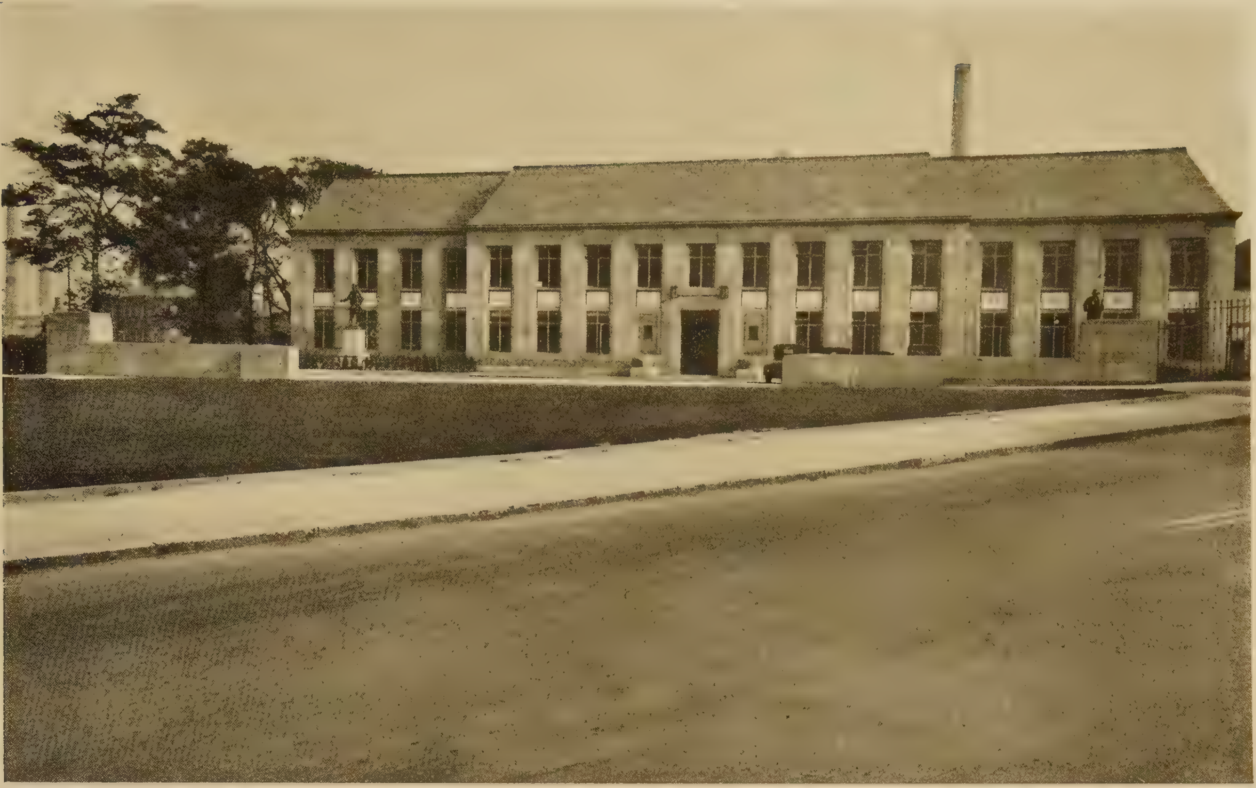
Fritz Höger and O. Gerson, Architects

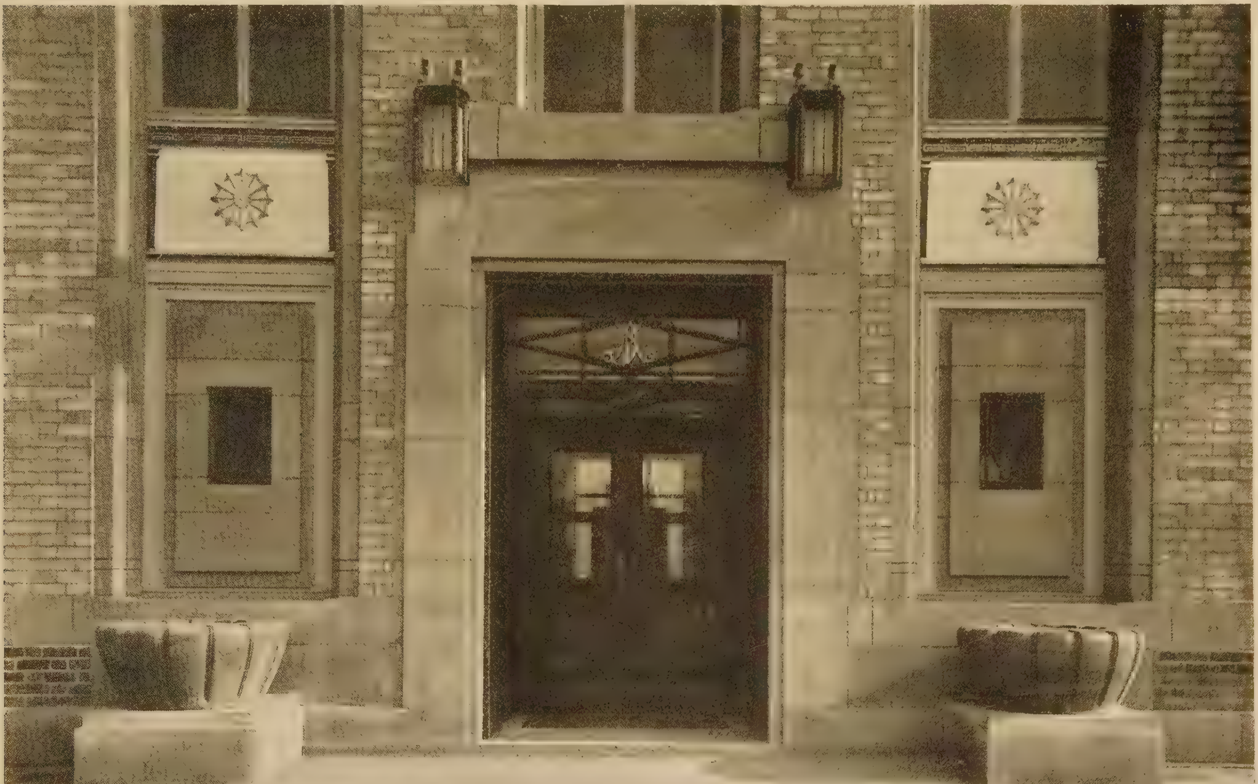


Staircase, The Sprinkenhof, Hamburg, Germany. ***Fritz Höger and O. Gerson, Architects***

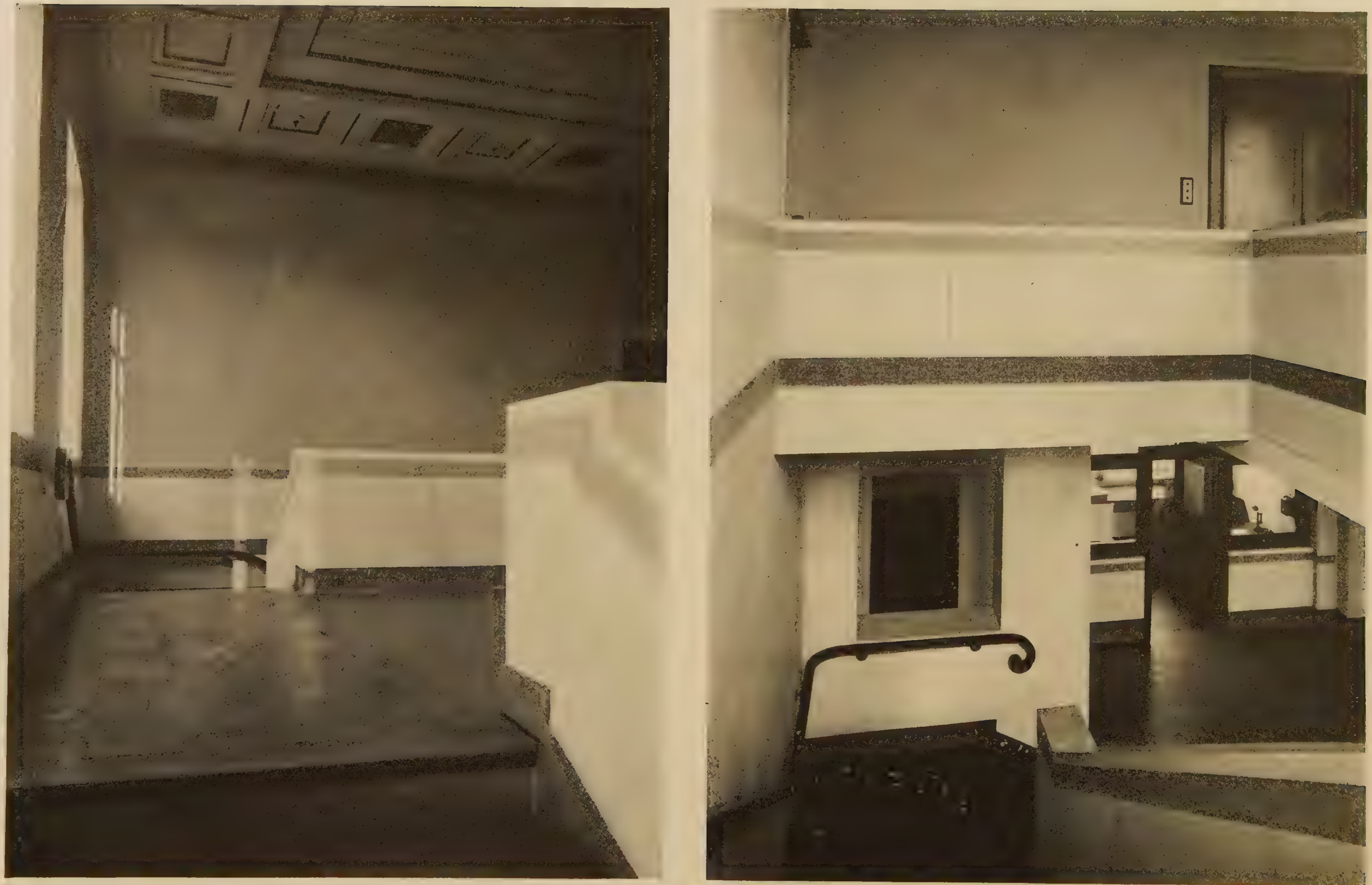


Details, The Sprinkenhof, Hamburg, Germany. Fritz Höger and O. Gerson, Architects

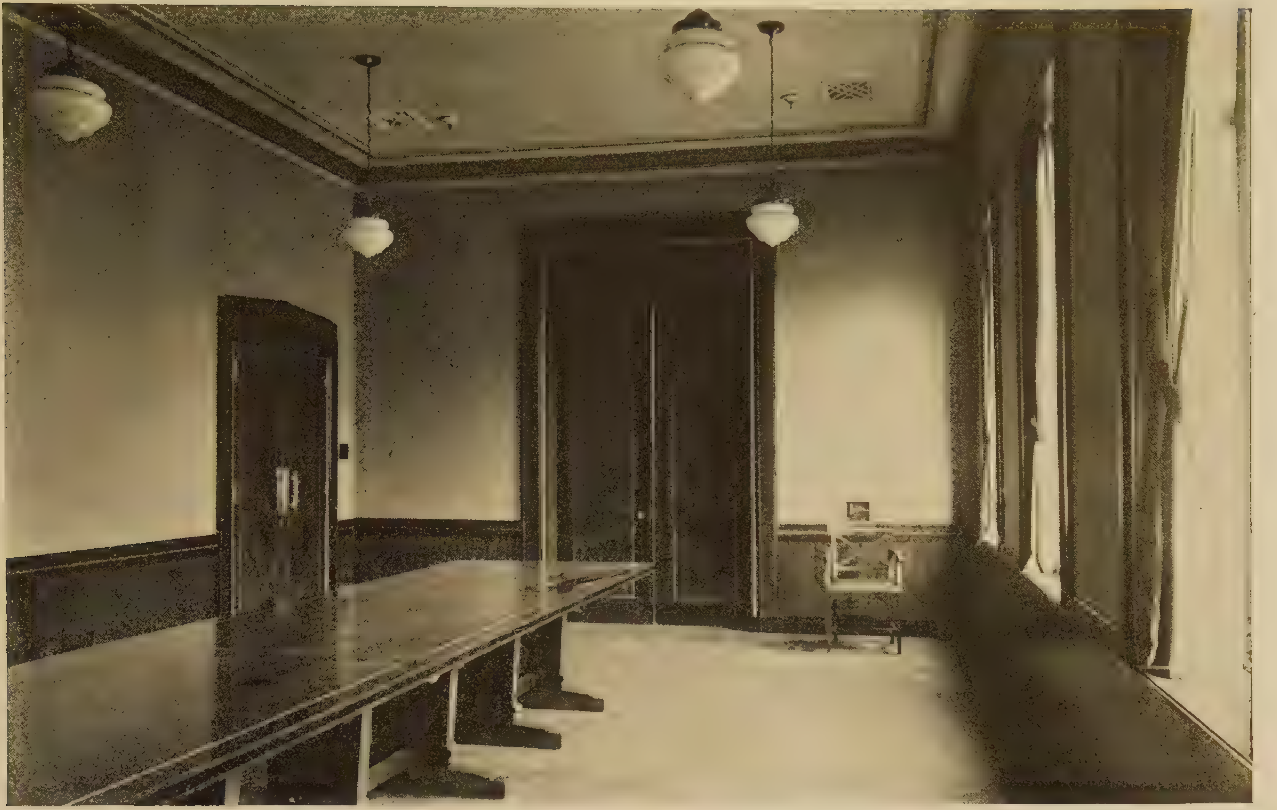


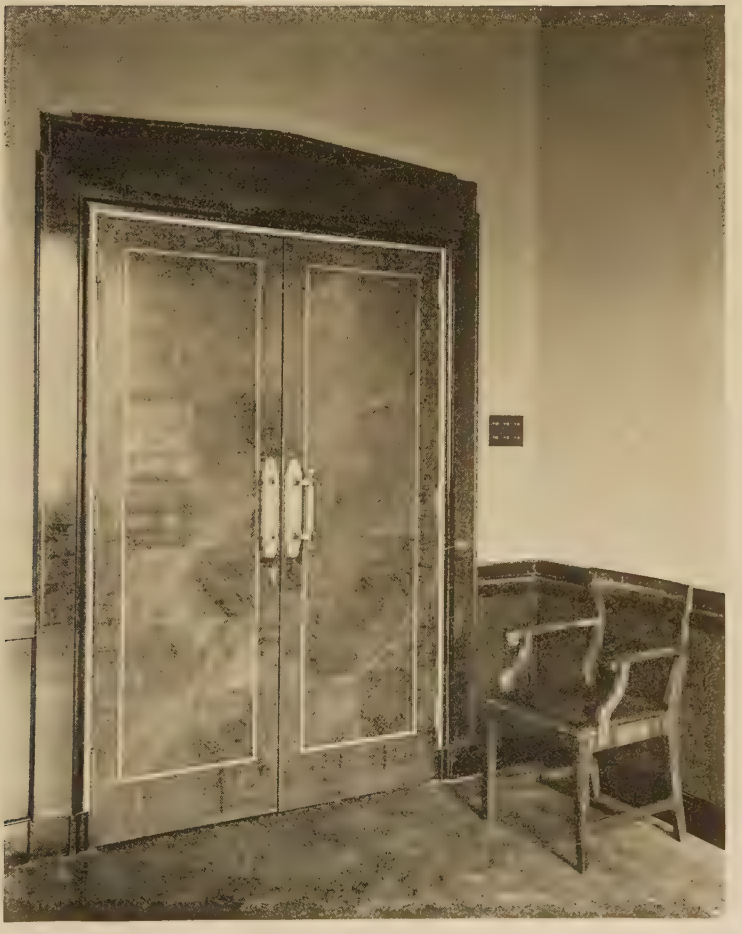


Laboratories, Imperial Chemical Industries, Ltd., Northwich, England. *L. H. Bucknell, Architect*



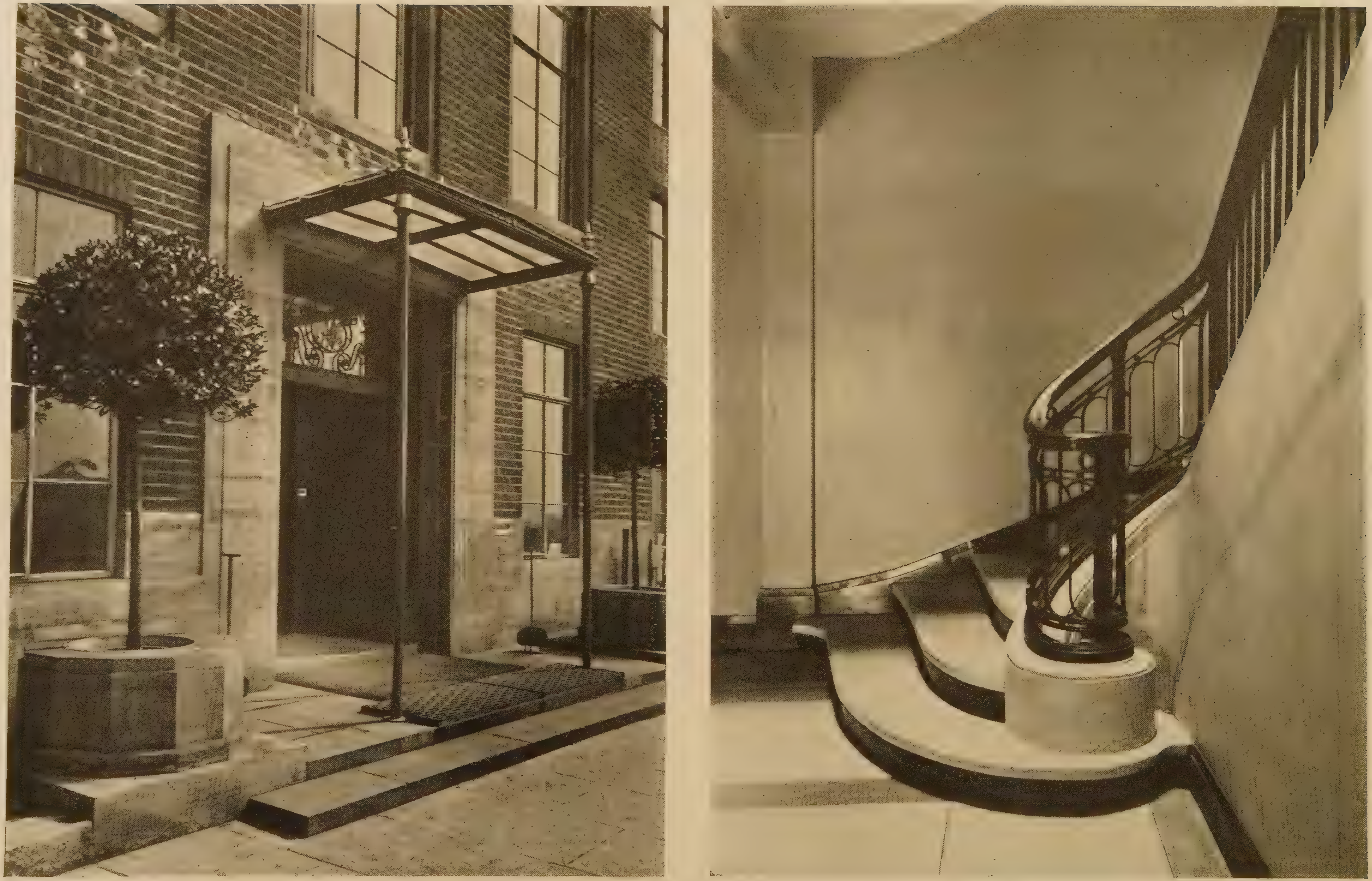
Laboratories, Imperial Chemical Industries, Ltd., Northwich, England. L. H. Bucknell, Architect



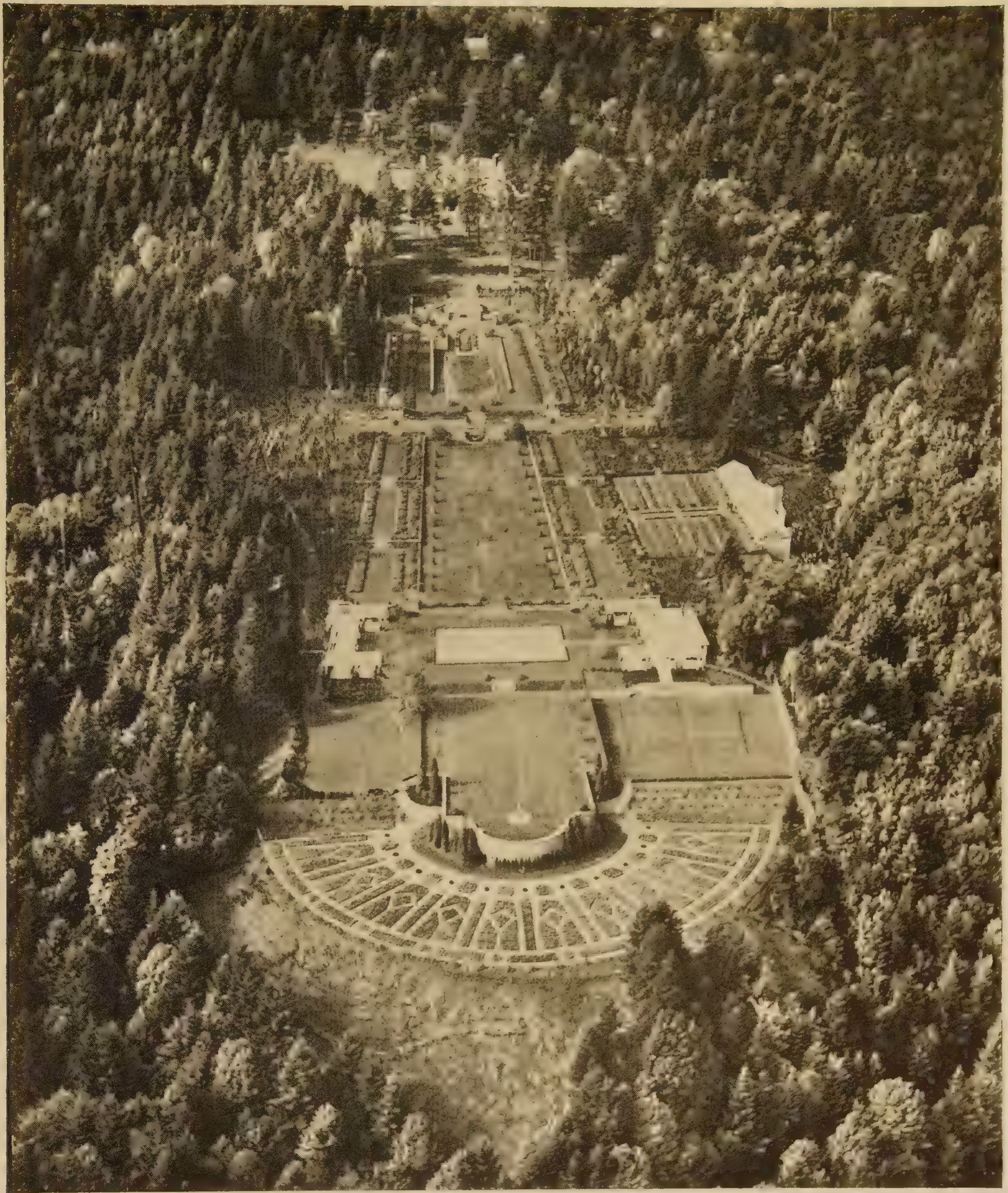


*Laboratories,
Imperial Chemical
Industries,
Ltd.,
Northwich, England*

*I. H. Bucknell,
Architect*



Laboratories, Synthetic Ammonia and Nitrates, Ltd., Billingham, England. *L. H. Bucknell, Architect*

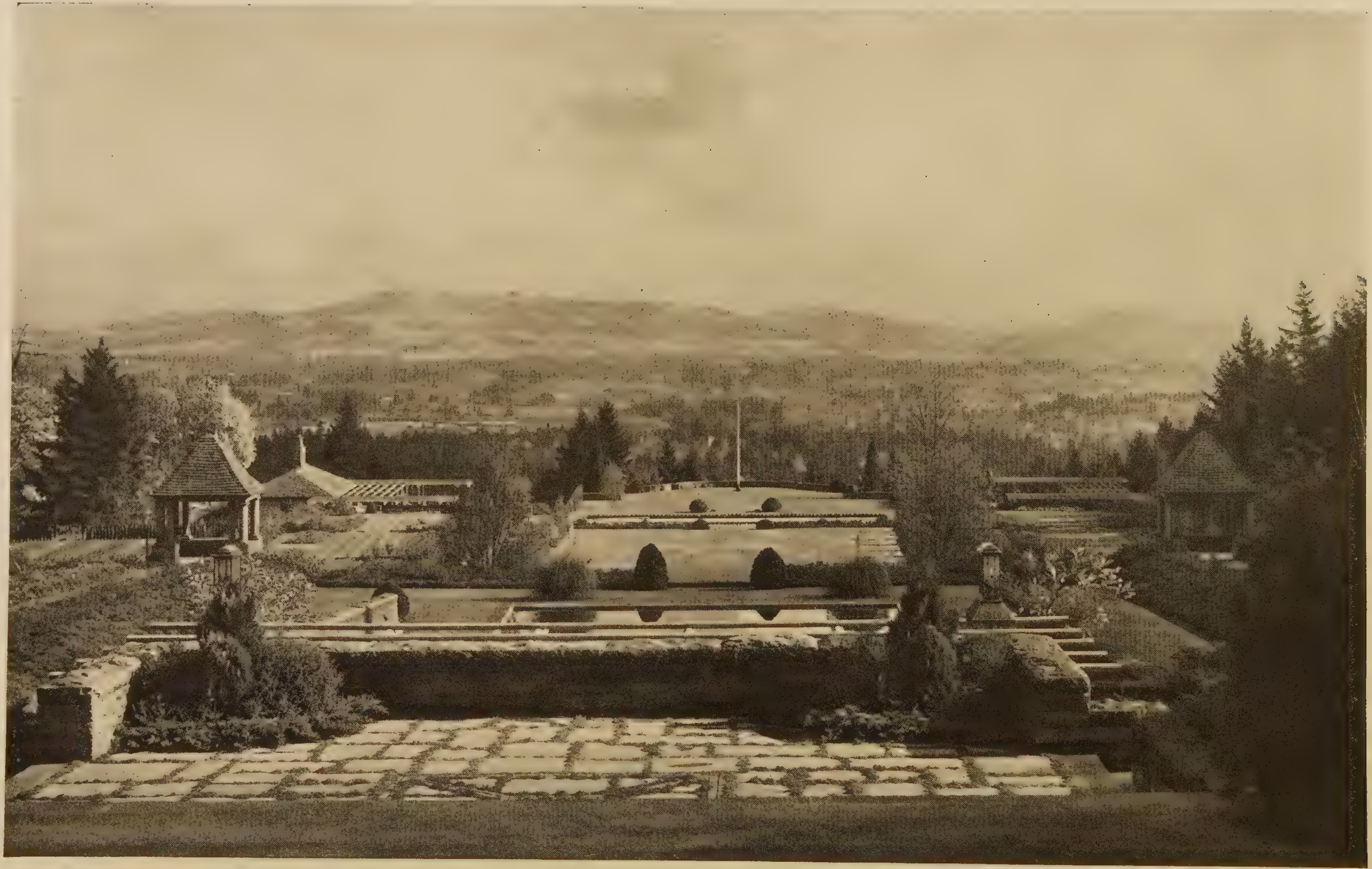


Bruhaker Aerial Surveys

The main house of Mr. Frank's estate was published in ARCHITECTURE *for January, 1928. On the outskirts of Portland, its main garden axis lies directly on a line from the house to the distant snow-capped Mt. Hood.*

Photographs, excepting above, by Peasley-Jourdan

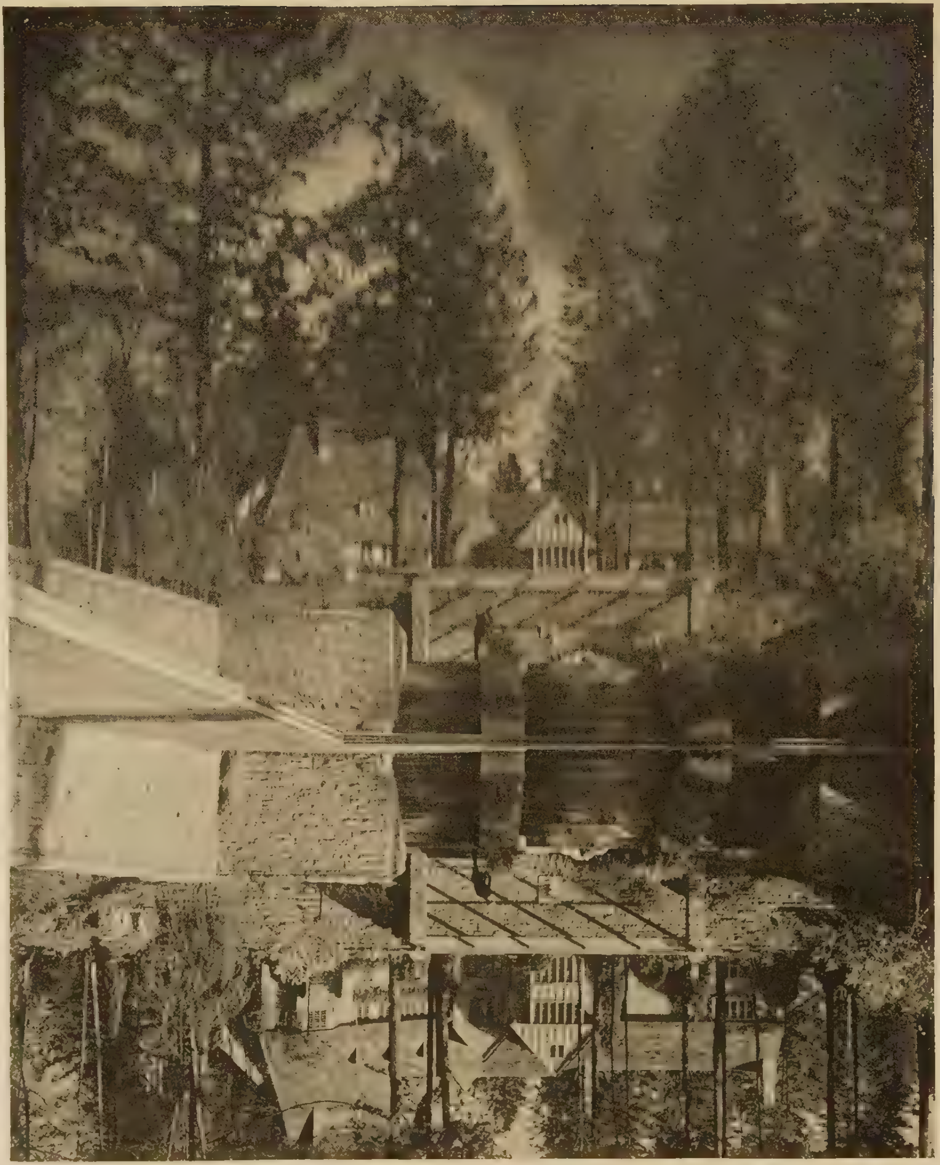
GARDEN, ESTATE OF M. LLOYD FRANK, PORTLAND, ORE. HERMAN BROOKMAN, ARCHITECT



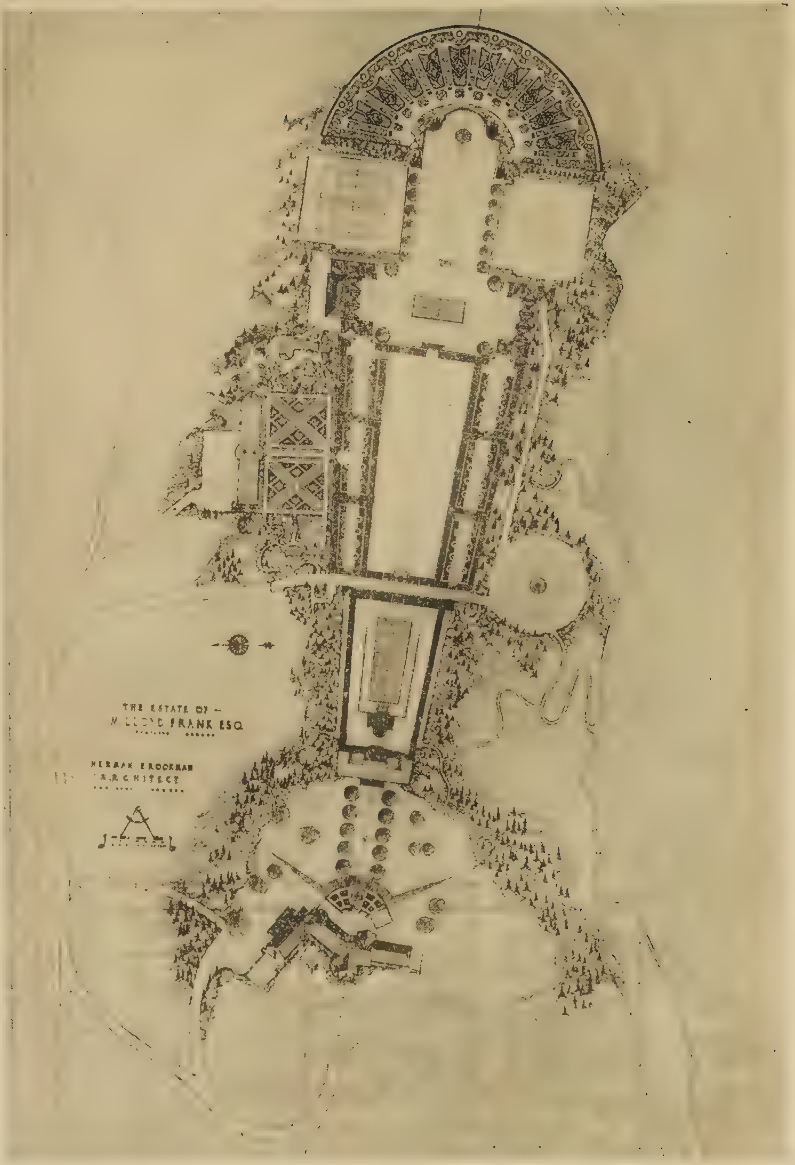
View down the long axis; Mt. Hood, unfortunately, is obscured by clouds

Garden, Estate of M. Lloyd Frank, Portland, Ore.

HERMAN BROOKMAN, ARCHITECT



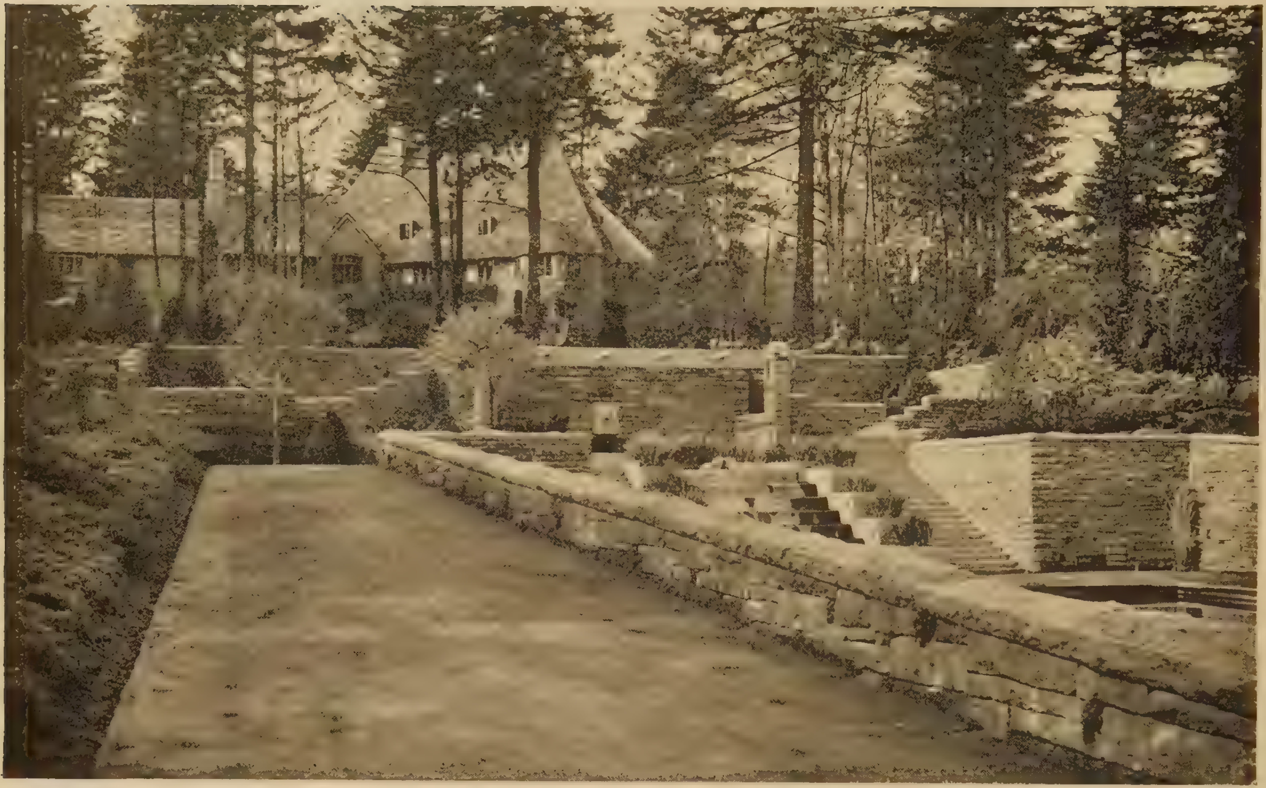
The house from below the reflecting-pool

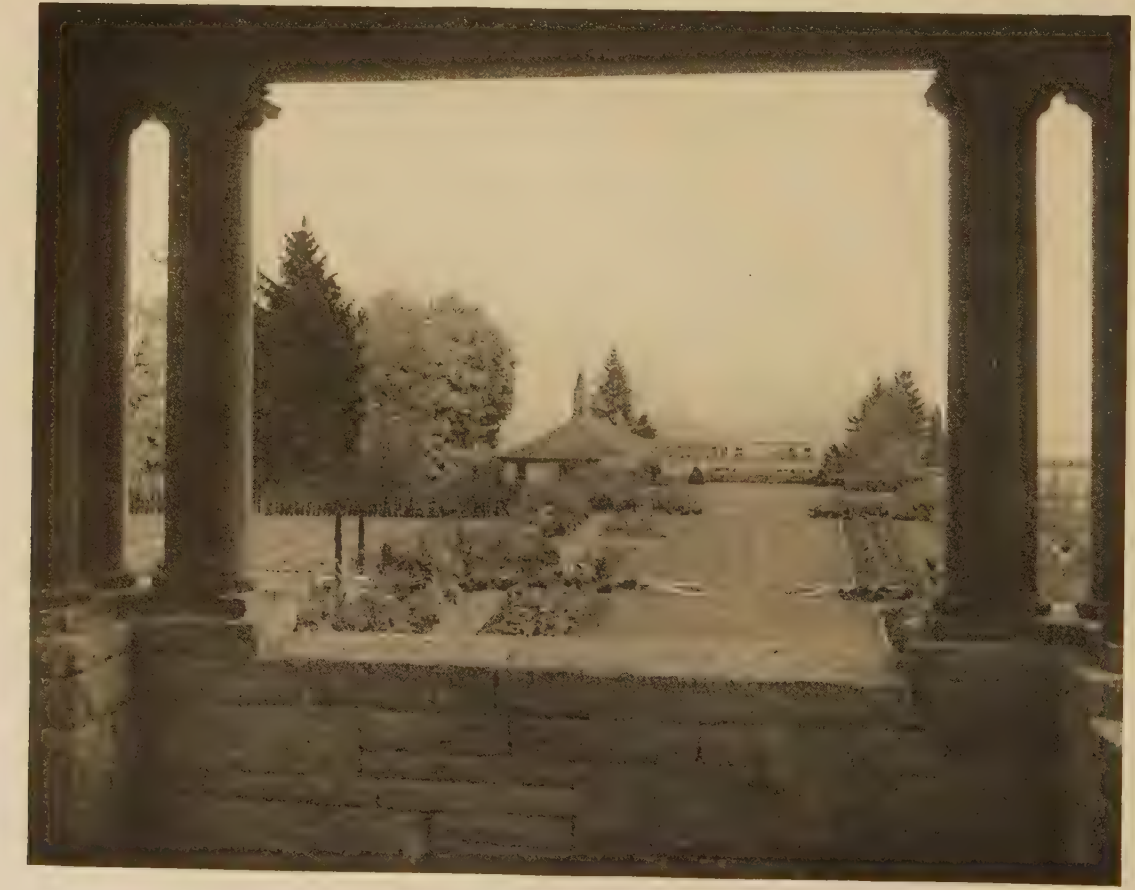


Plan of garden in relation to the house

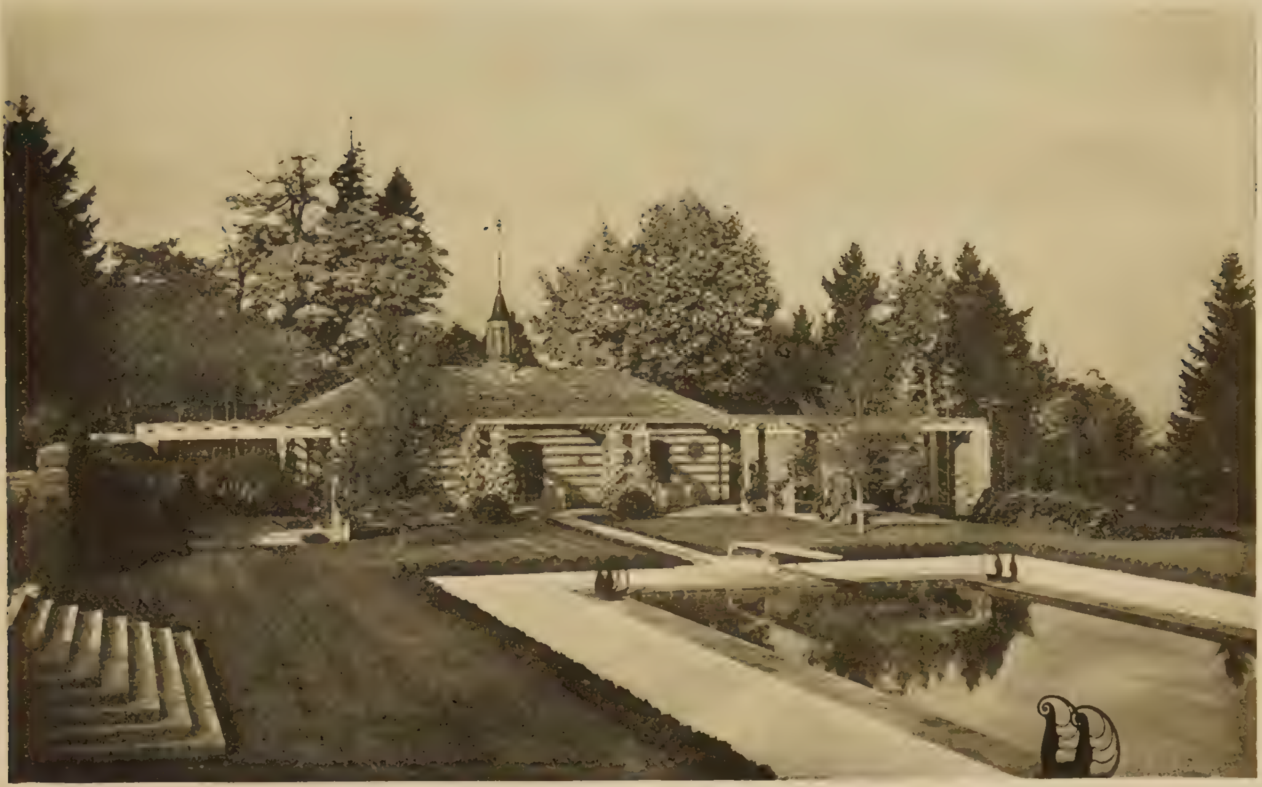
Garden, Estate of M. Lloyd Frank, Portland, Ore.

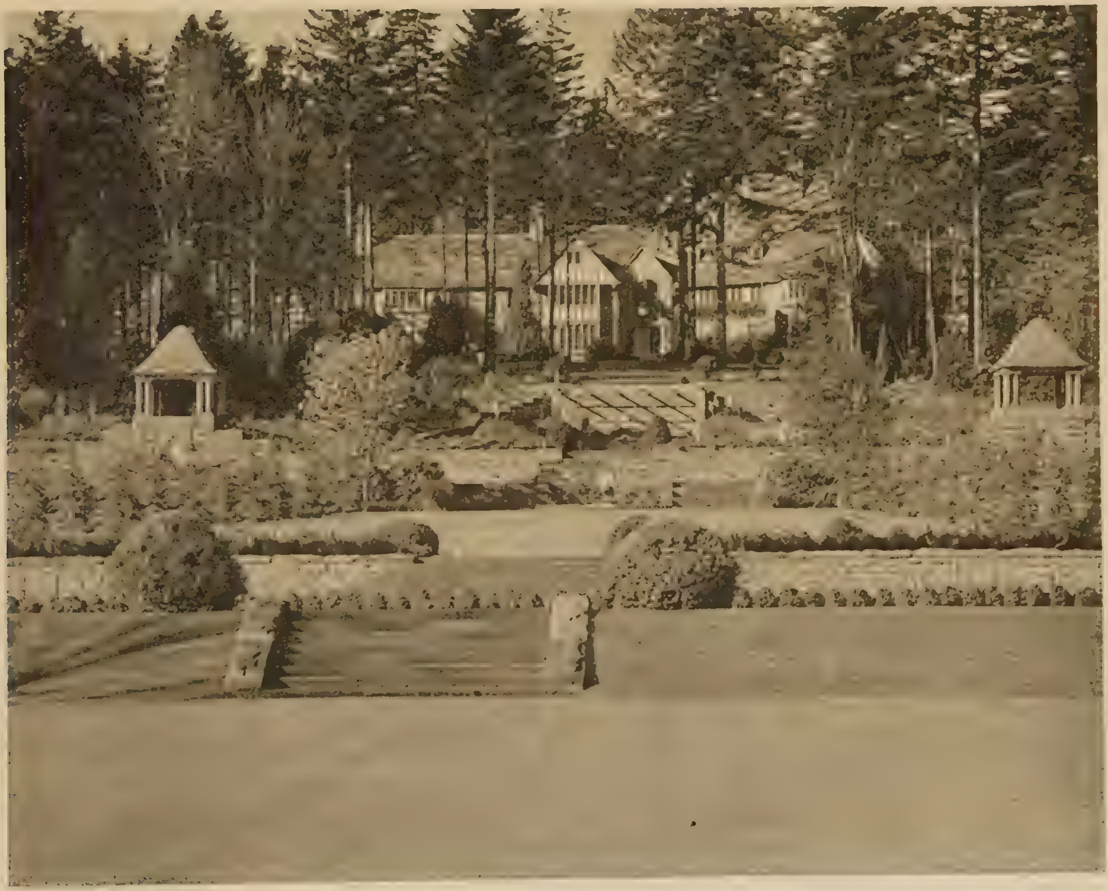
HERMAN BROOKMAN, ARCHITECT



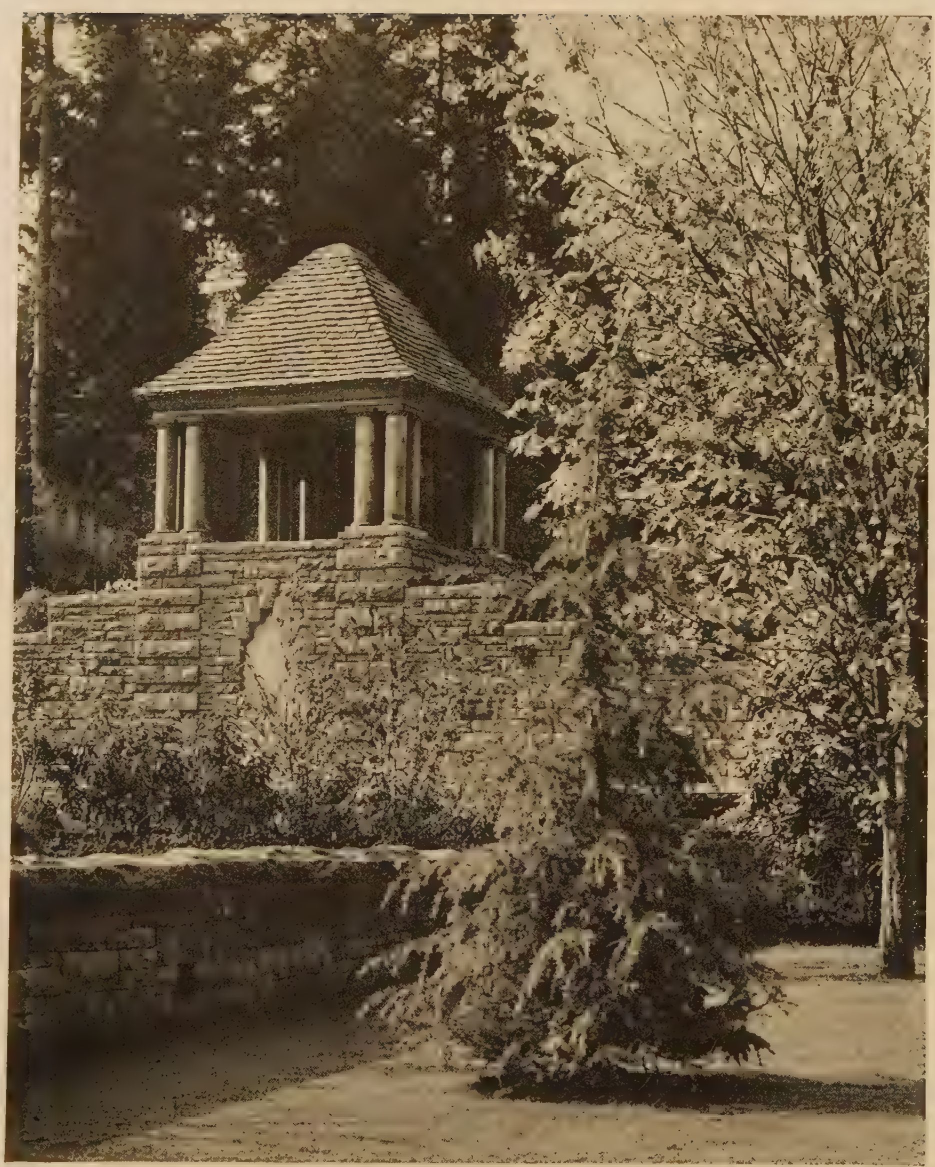


Garden, Estate of M. Lloyd Frank, Portland, Ore. HERMAN BROOKMAN, ARCHITECT

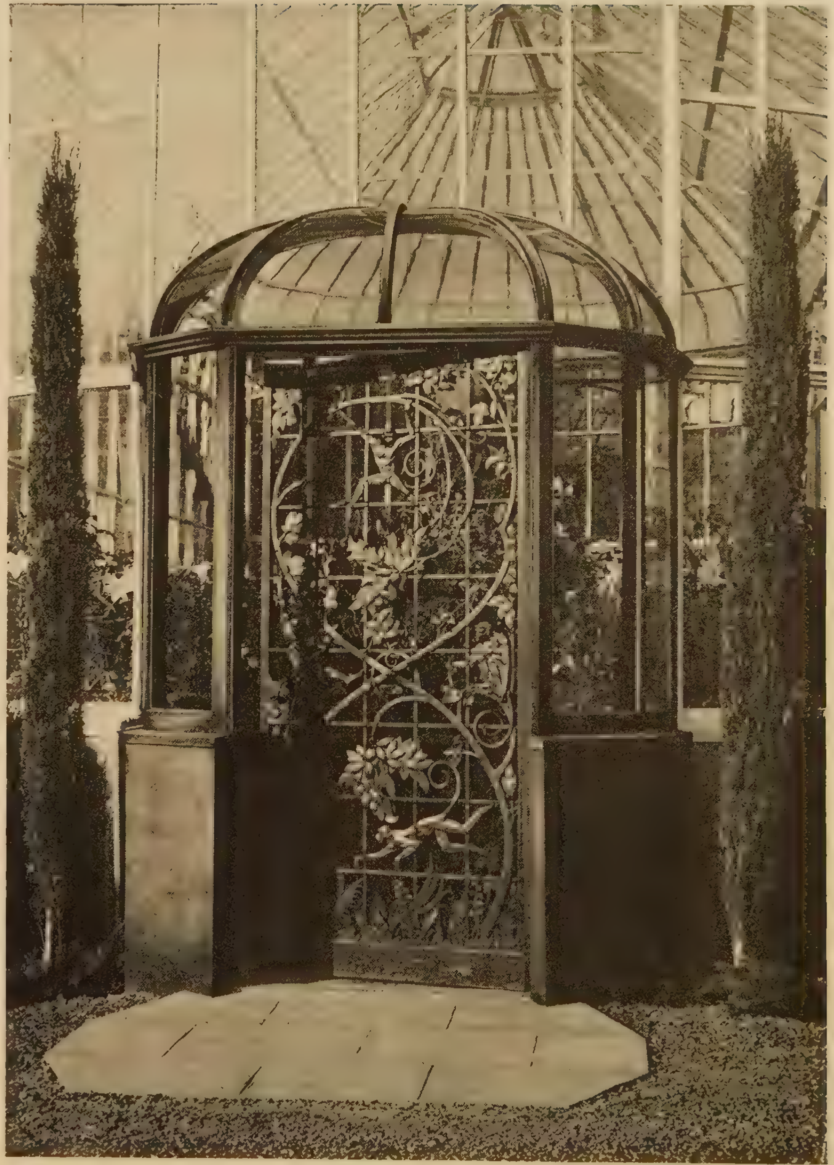




Garden, Estate of M. Lloyd Frank, Portland, Ore. herman brookman, architect



The gazebo



Conservatory door; Oscar B. Bach, designer and craftsman

Garden, Estate of M. Lloyd Frank, Portland, Ore.

HERMAN BROOKMAN, ARCHITECT

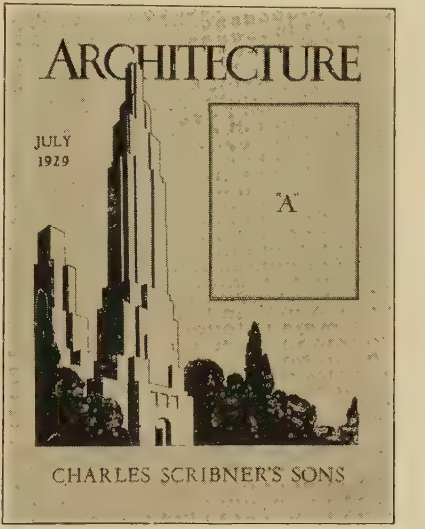
ARCHITECTURE'S Cover Competition Awards

IN announcing the programme for a competition with the purpose of securing, if possible, a new cover for ARCHITECTURE, we said: "ARCHITECTURE is rather well pleased with its present cover, which was designed by Mr. W. A. Dwiggins about three years ago. . . . Possibly a still better cover could be designed, we are interested to know what the architects themselves would do with the problem; hence this competition."

To be frank, the jury feels that the hope implied in the above programme has not been realized. It was in the minds of those responsible for the magazine that possibly some unmistakable improvement might result among the entries for the prizes offered. The jury feels, however, that such has not been the case.

The prizes, of course, are awarded in accordance with the findings of the jury as set forth below. For the present, however, ARCHITECTURE will continue to appear in its present cover design which, as has been explained, rotates in a series of four color combinations.

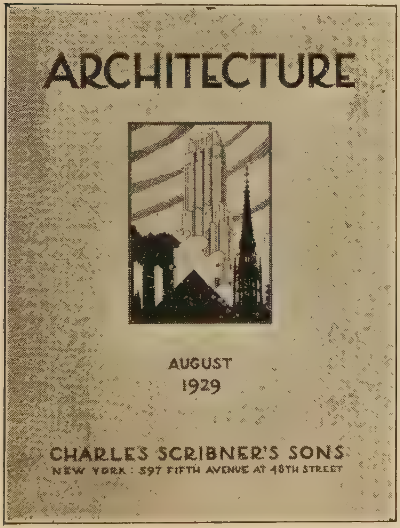
The first prize in the competition, $150, is awarded to Aaron Libin, of Chicago, Ill. Mr. Libin's design, which is shown herewith, provides a panel, "A," for the featuring of certain items of the contents. The design, as submitted, was on light blue stock, printed in dark blue ink. The designer provided for a rotation of four color schemes, the others being light brown stock with dark brown ink, light green stock with dark green ink, yellow stock with black ink.



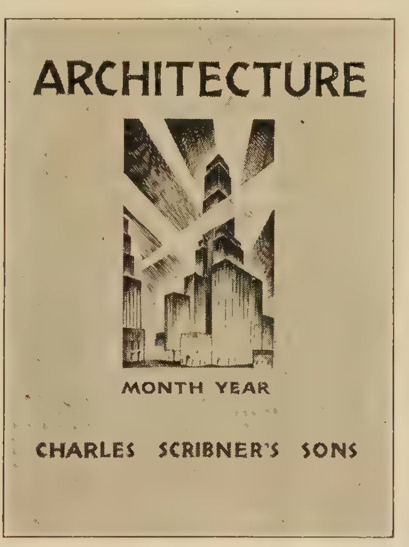
Design awarded First Prize
By Aaron Libin, Chicago, Ill.

In accordance also, with the provisions of the programme, the jury has selected three other designs for Honorable Mention. These are not necessarily placed in order of merit. To each of these three designers ARCHITECTURE is sending an order on Charles Scribner's Sons for books to the amount of $25. The authors of these three Honorable Mentions are as follows: Mr. Trent Sanford, of Evanston, Ill.; Mrs. Miriam Tindall Smith, of Charlotte, N. C.; and Mr. Sidney Dampsey, of the Bronx, New York.

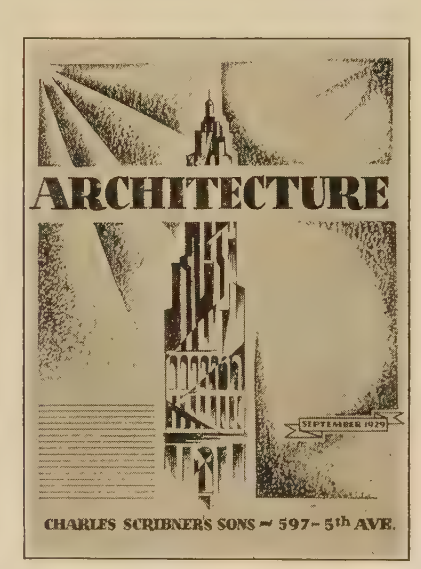
Mr. Sanford's design provided for a rotating series of three color stocks—tan, gray, and terra-cotta, with the printing in black ink. Mrs. Smith's entries also provided for a rotation of four color combinations. Mr. Dampsey's design as presented was in blue on brick red. He also provided for a rotation of four combinations.



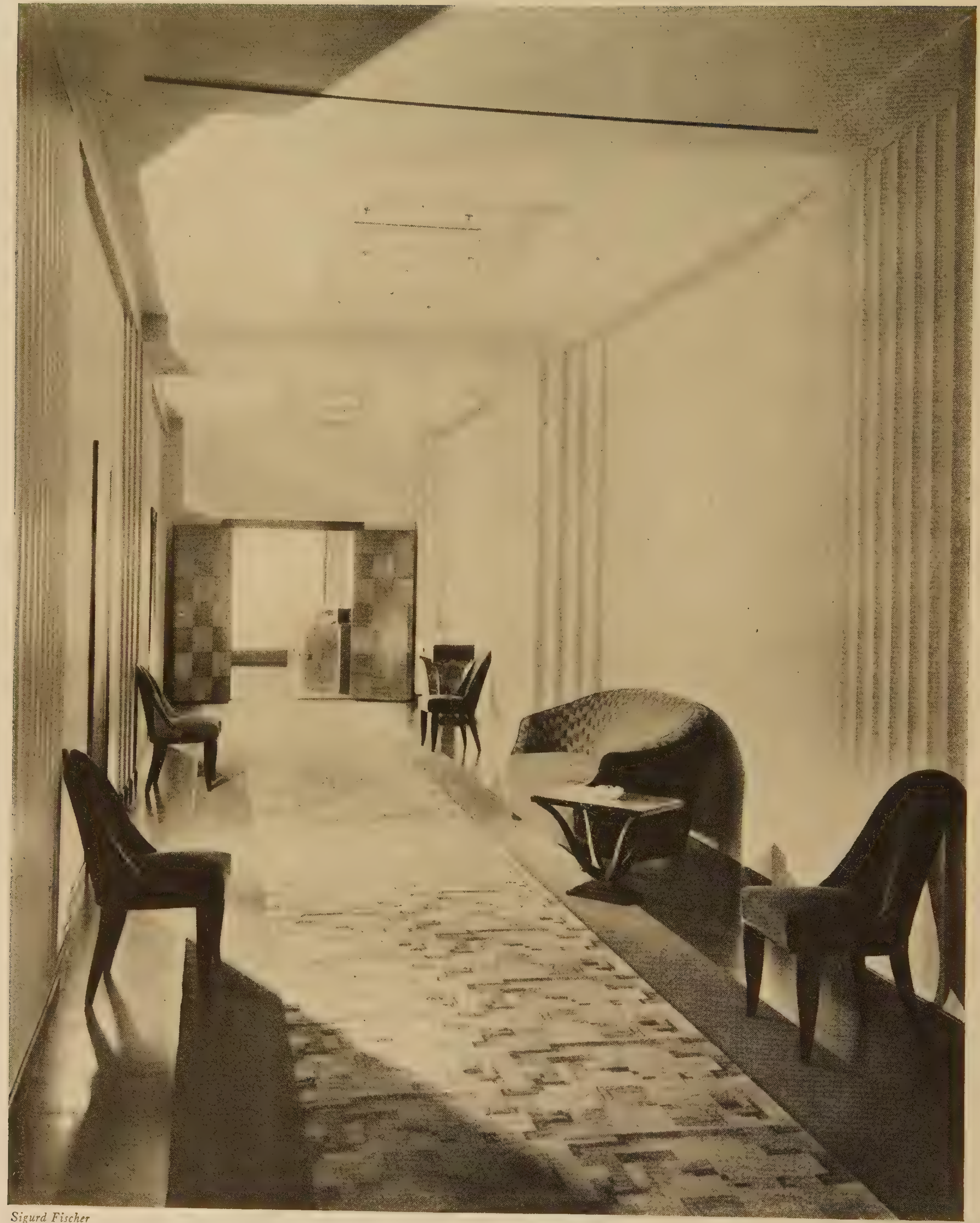
Honorable Mention
By Trent Sanford, Evanston, Ill.



Honorable Mention. By Mrs. Miriam Tindall Smith, Charlotte, N. C.


ARCHITECTURE
SEPTEMBER 1929
CHARLES SCRIBNER'S SONS ~ 597 - 5th AVE.

Honorable Mention. By Sidney Dampsey, The Bronx, New York

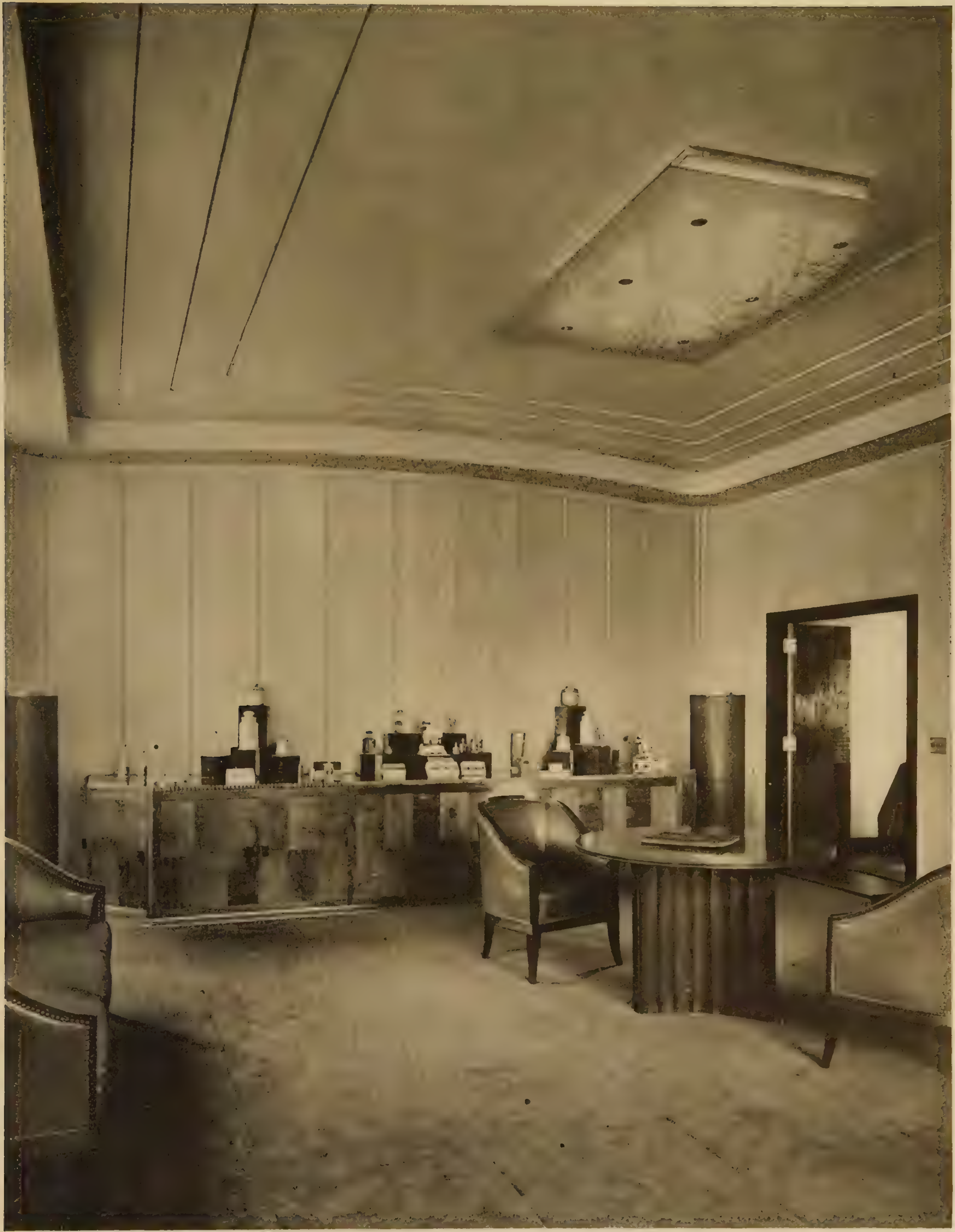


Sigurd Fischer

Entrance

Salesrooms for Yardley & Co., Ltd., New York City

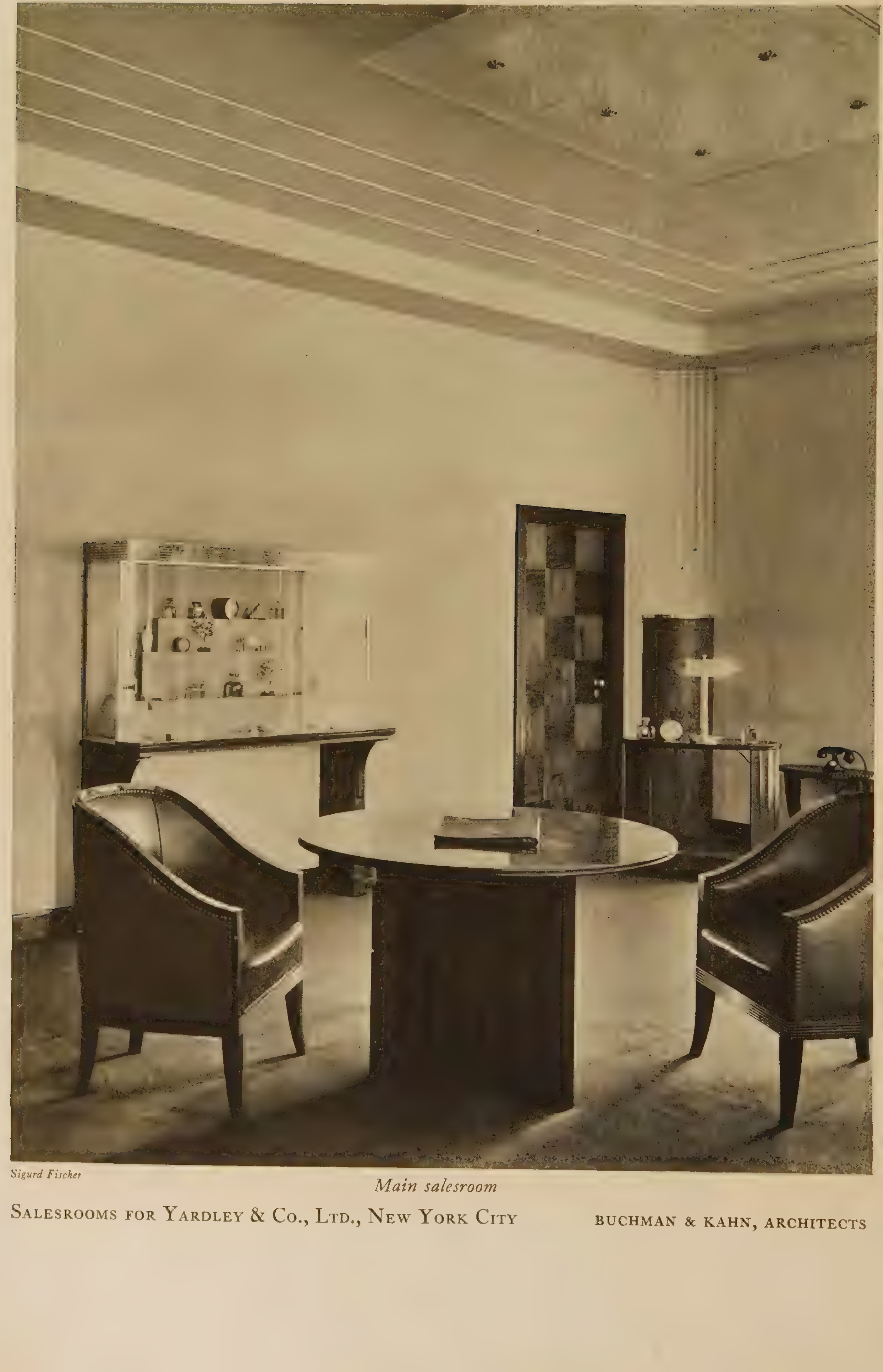
BUCHMAN & KAHN, ARCHITECTS



Sigurd Fischer

Main salesroom

Colors and textures are important factors. The woodwork is of French walnut —walls a warm buff. Walnut furniture is upholstered in light brown leather. The ceiling fixtures are carved glass with silver frames and buttons



Sigurd Fischer

Main salesroom

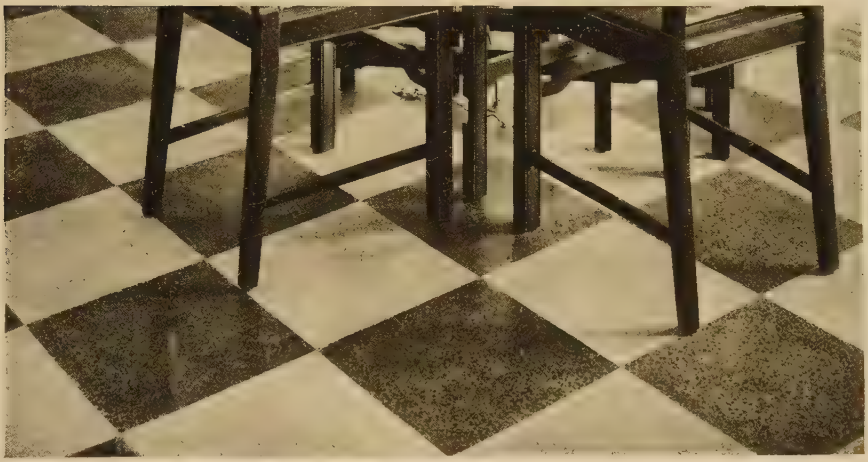
Salesrooms for Yardley & Co., Ltd., New York City BUCHMAN & KAHN, ARCHITECTS

ARCHITECTURE'S PORTFOLIO

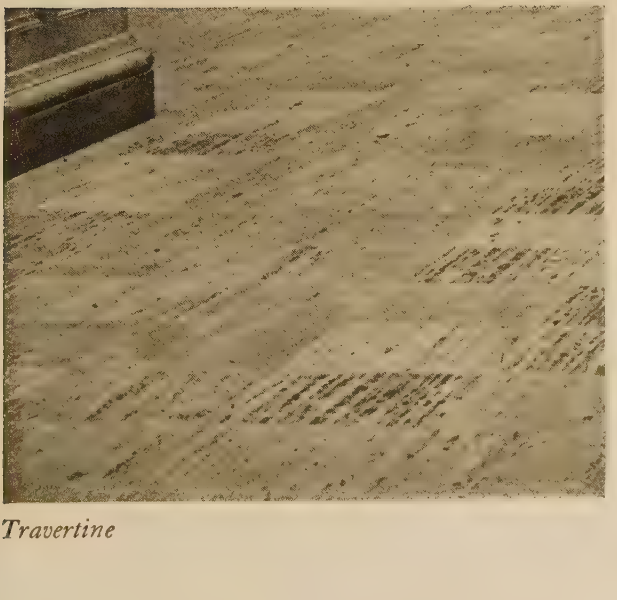
OF

INTERIOR PAVING

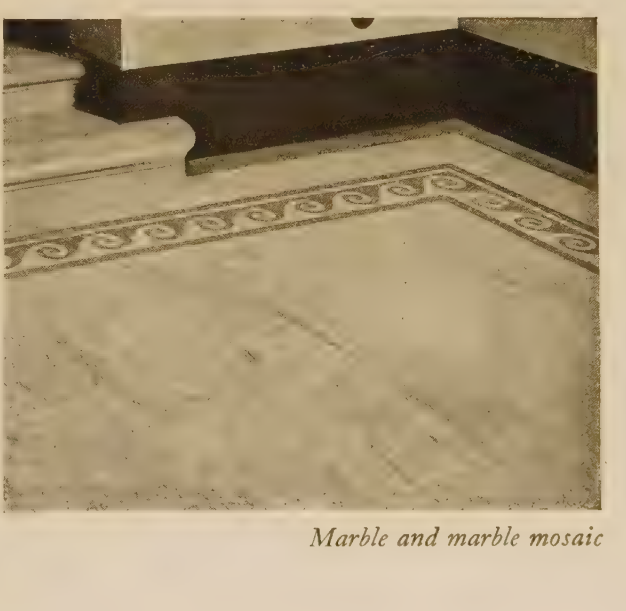
Hitherto in this series it has been our custom to credit the illustrations to the architects or other designers without further comment. With this particular subject, the authorship of the design seems less important than the materials used. The captions, therefore, indicate merely the material or type of pattern



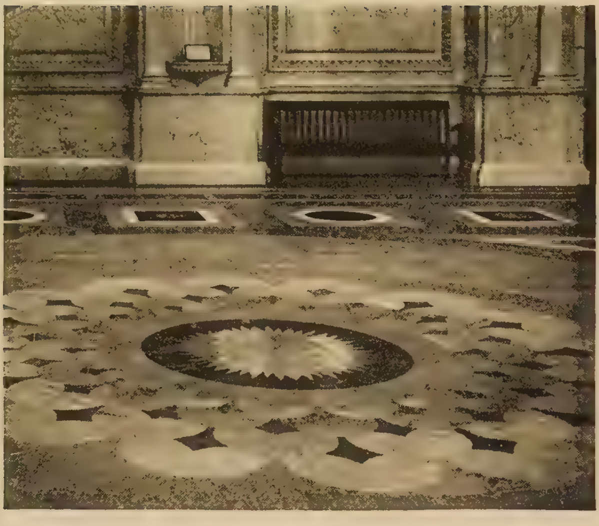
Terrazzo checkerboard



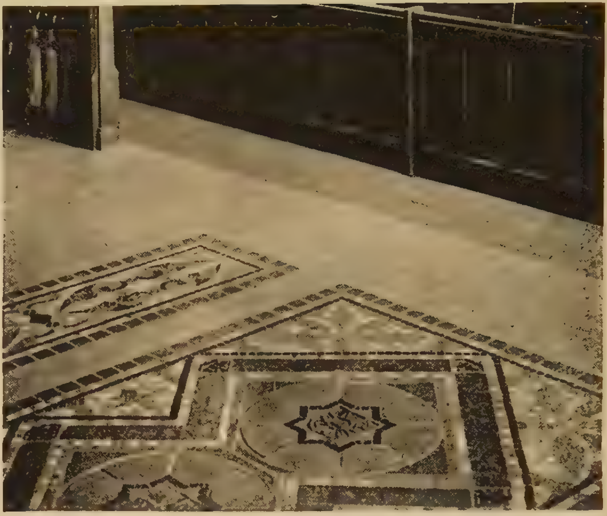
Travertine



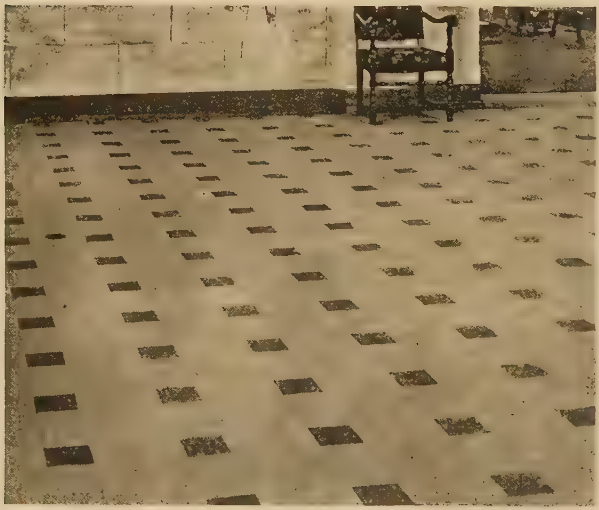
Marble and marble mosaic



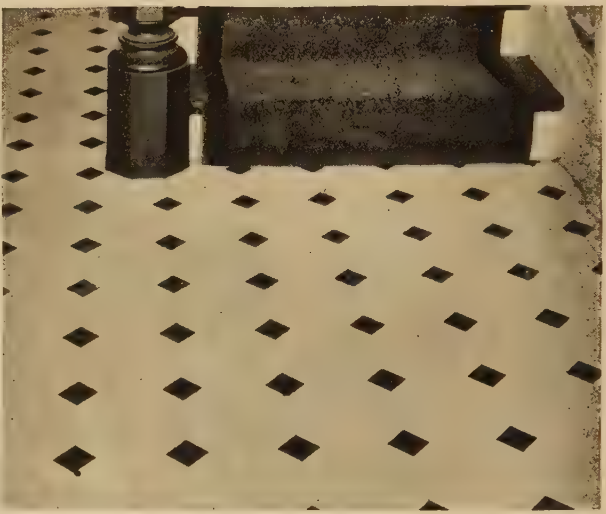
Marble, Congressional Library



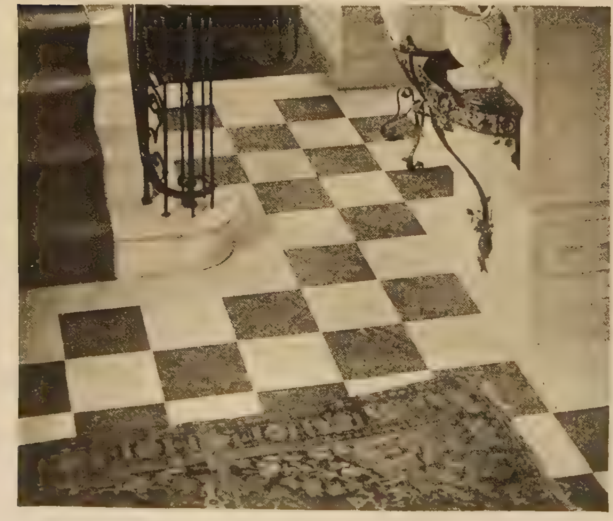
Marble in a church chancel



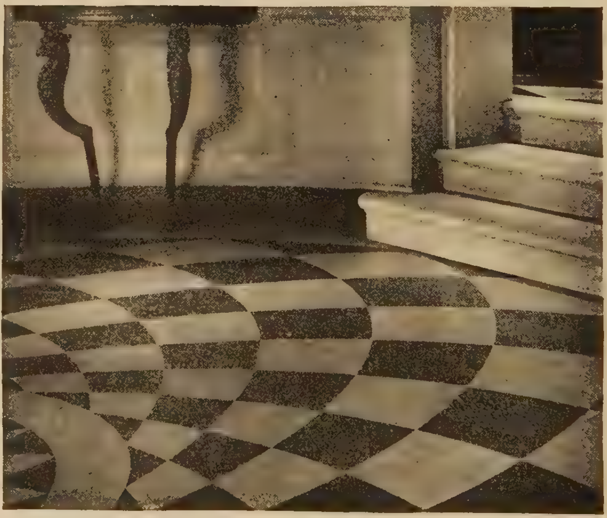
Marble—white rectangles with black squares



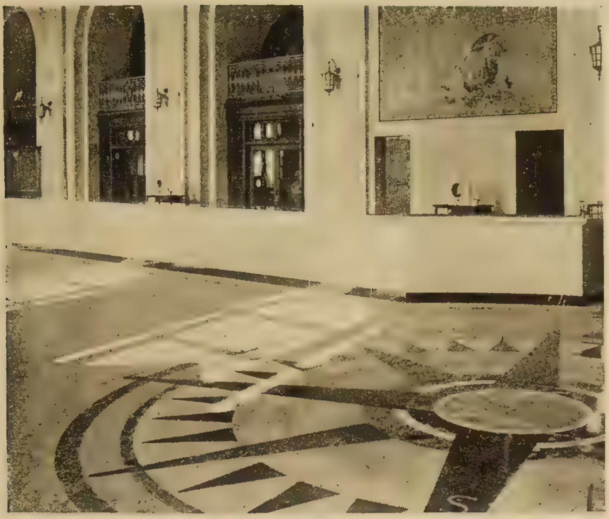
Marble—black corner diagonals



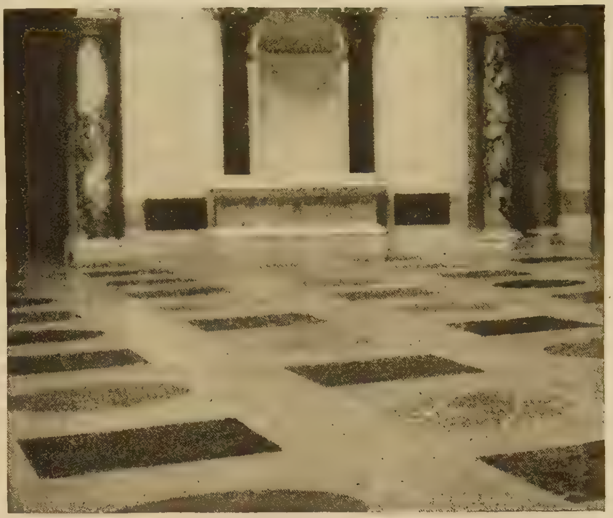
Marble checkerboard



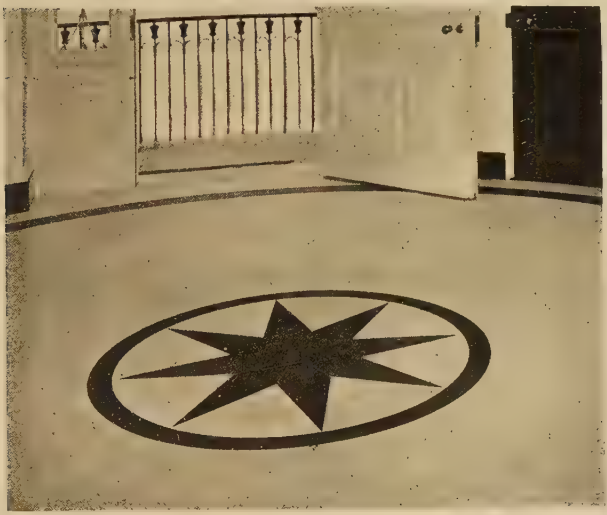
Black and white marble



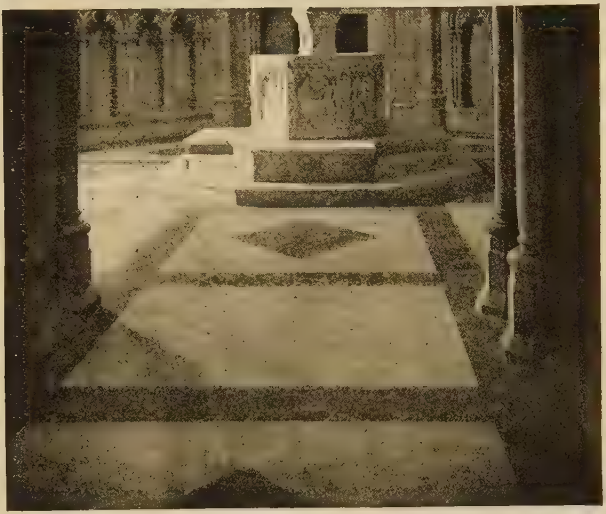
Compass points in marbles



Varicolored marbles



Black and white marbles in a circular hall



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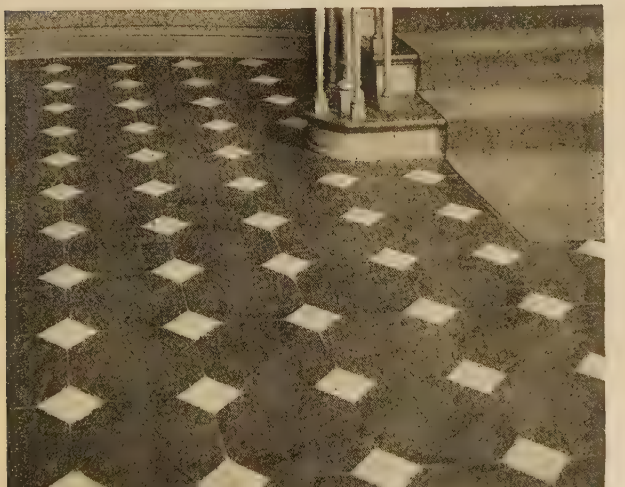
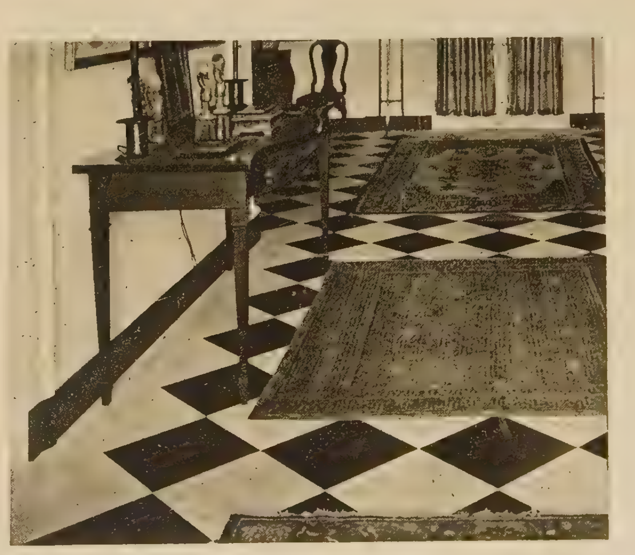
Marbles in a cathedral baptistry

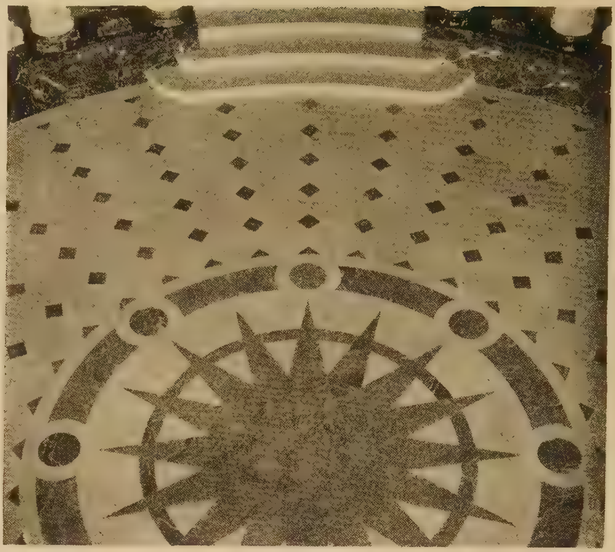


Marble—white corner diagonals

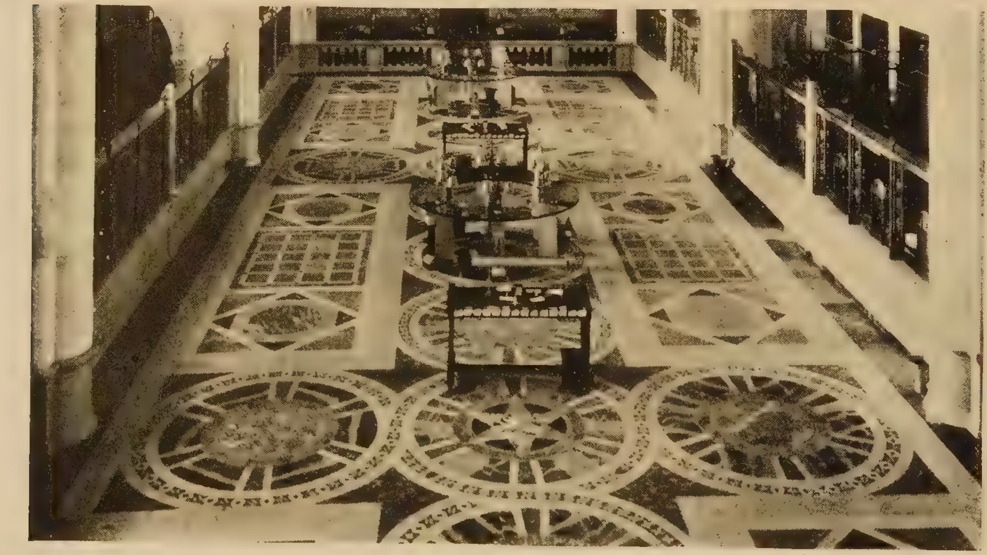


Diagonal checkerboard

Marble squares with inlaid borders

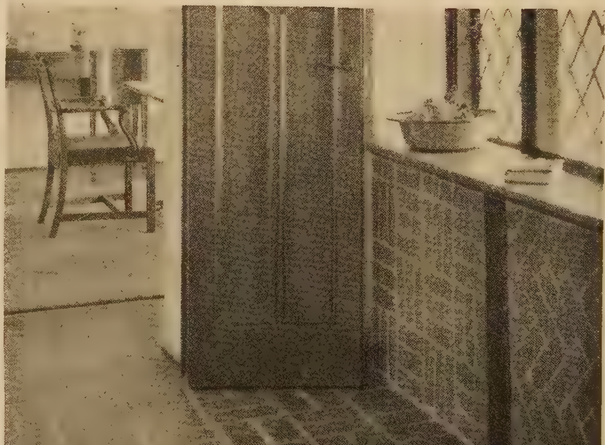


Marble in radial concentric cutting

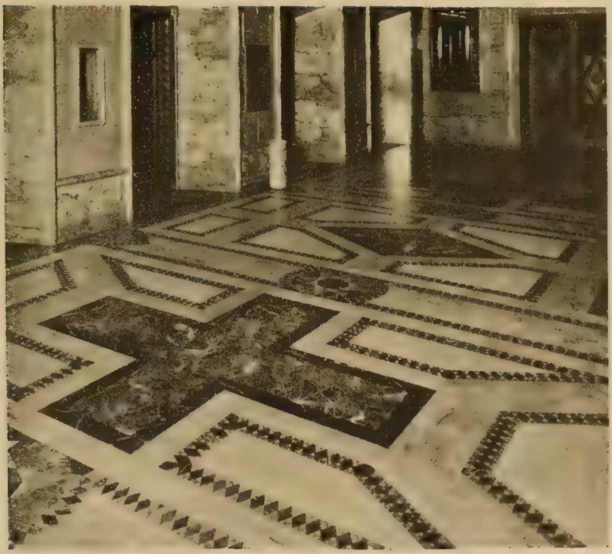


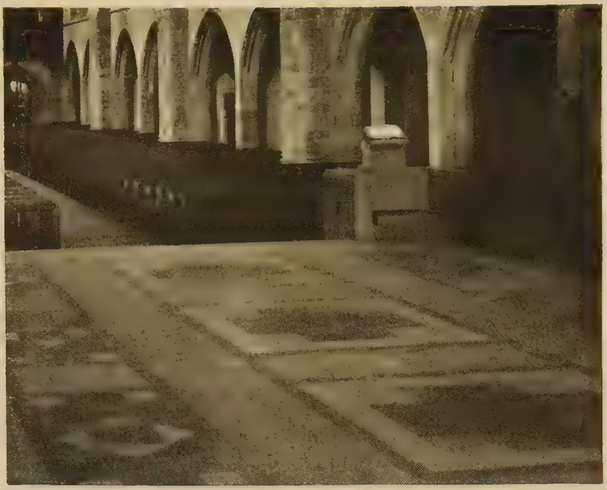
Varicolored marbles in a banking room

Special-size brick in herringbone



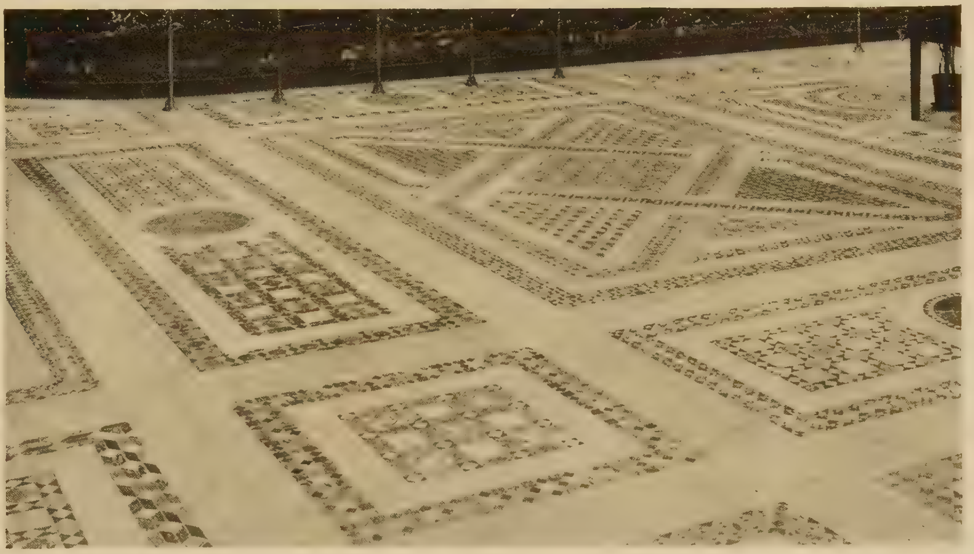
Basketweave brick





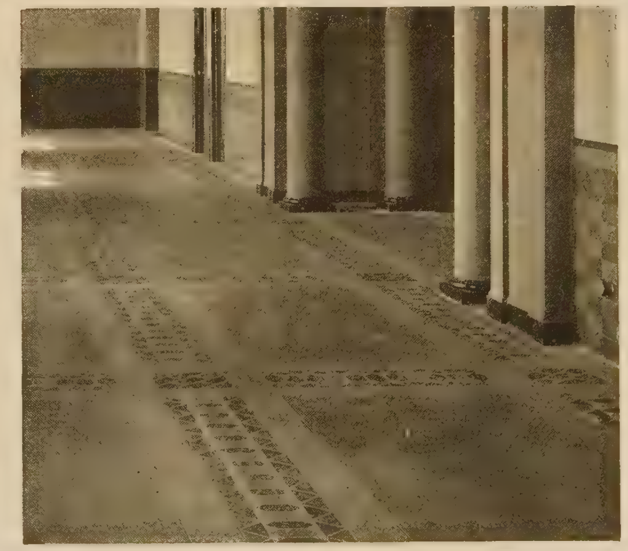
Marbles in a church chancel

Varicolored marbles in an office lobby

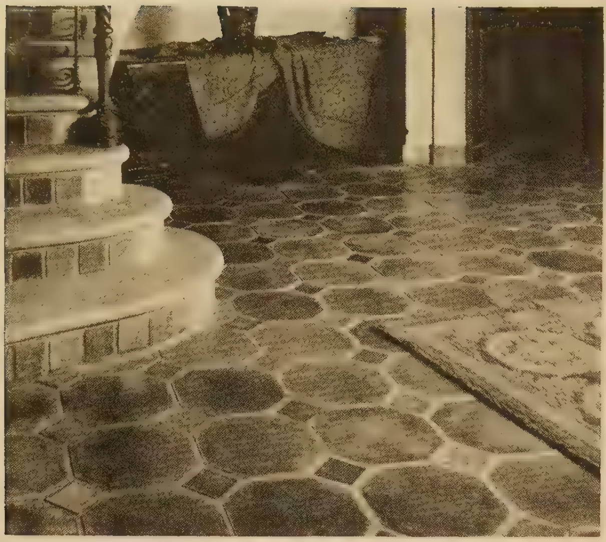


Marble and marble inlays in a banking room

Brick flatwise, waxed

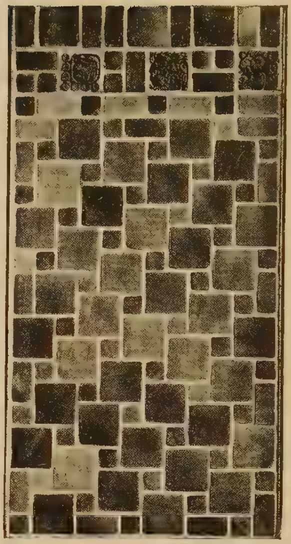


Terrazzo with tile division lines

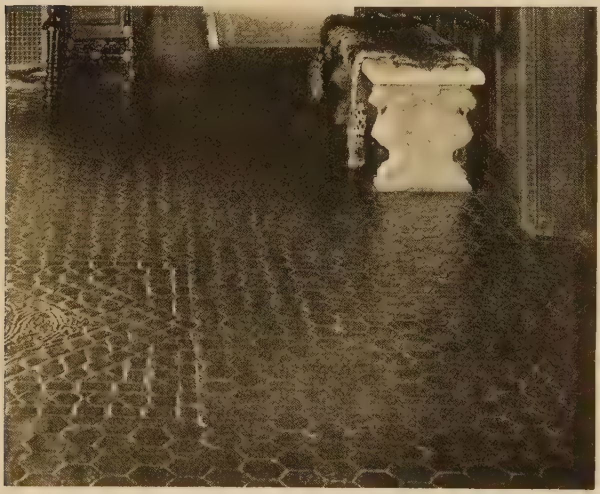


Hexagonal tile with square corners

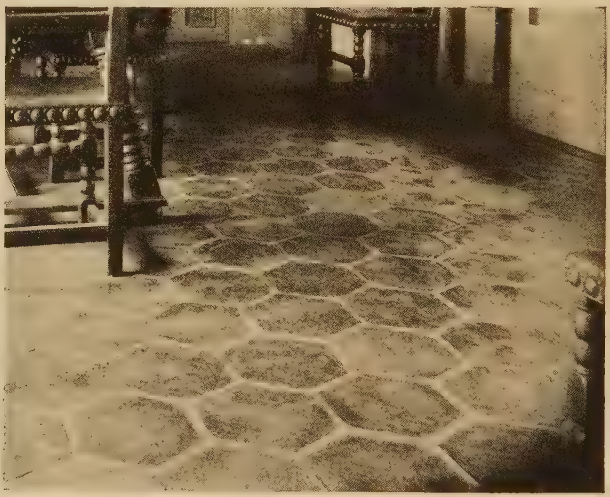
Handmade tile in random pattern



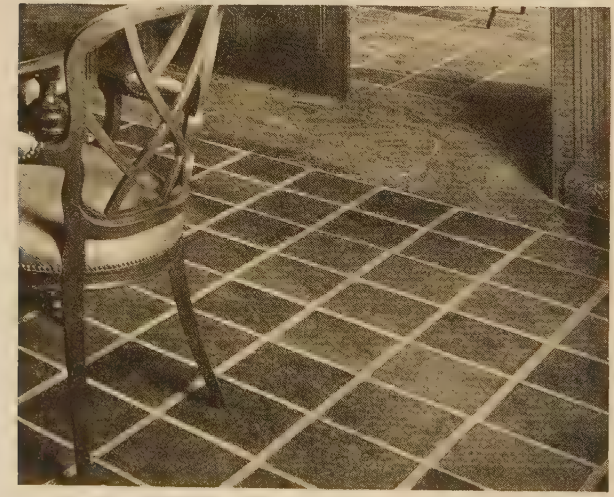
Handmade tile in two sizes of squares with border



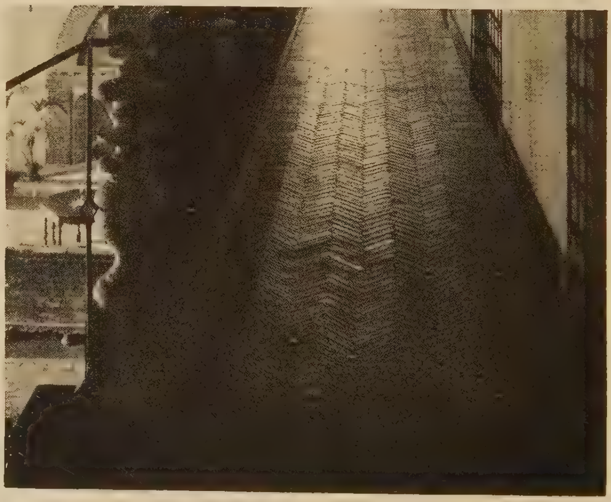
Hexagonal tile with special centre motive



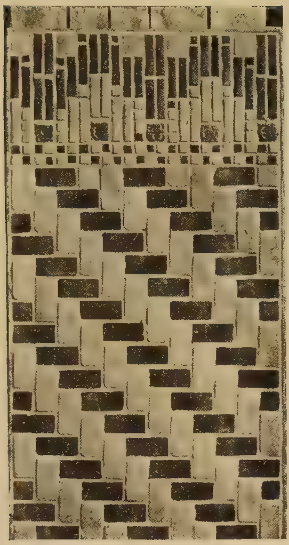
Large hexagonal tile in a Spanish adaptation



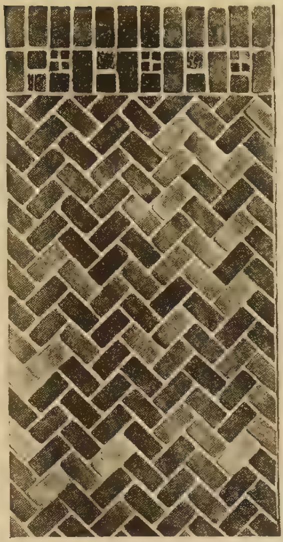
Square tile with wide joints



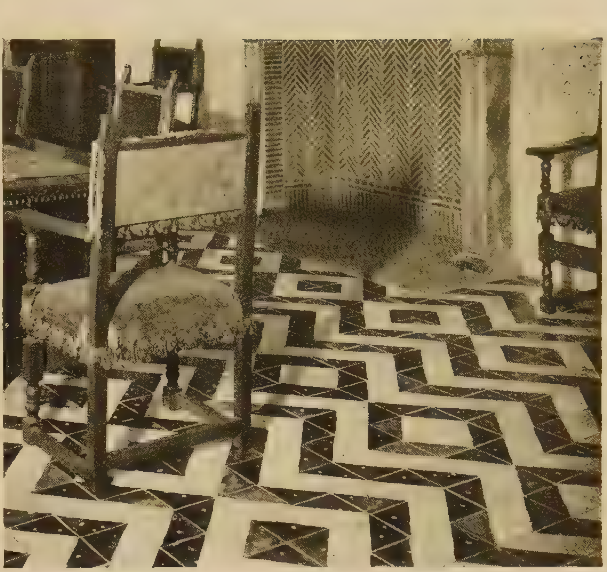
Herringbone brick on edge with tile border



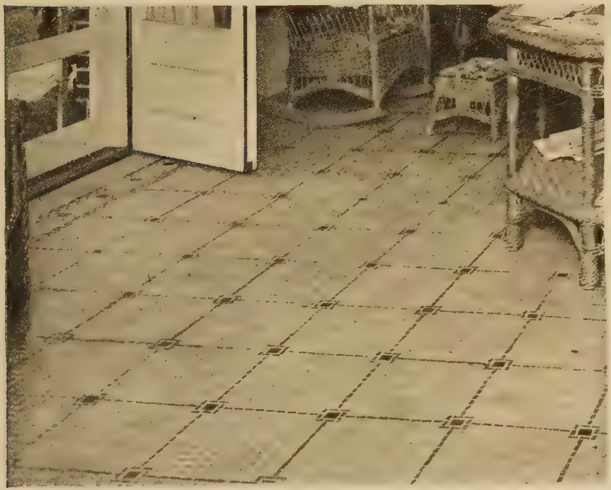
Two colors of uniform tile with border



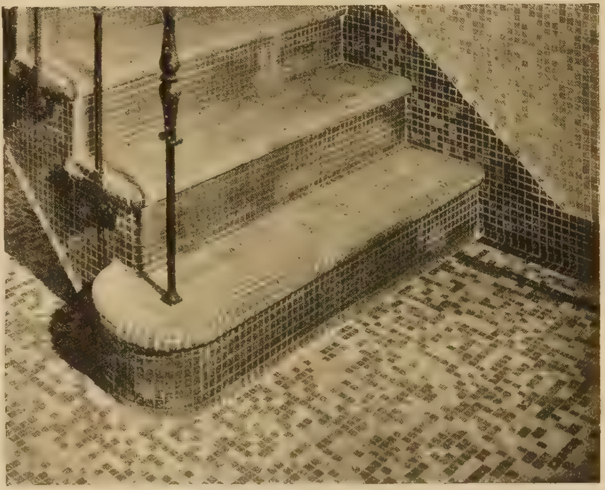
Handmade tile with color variation



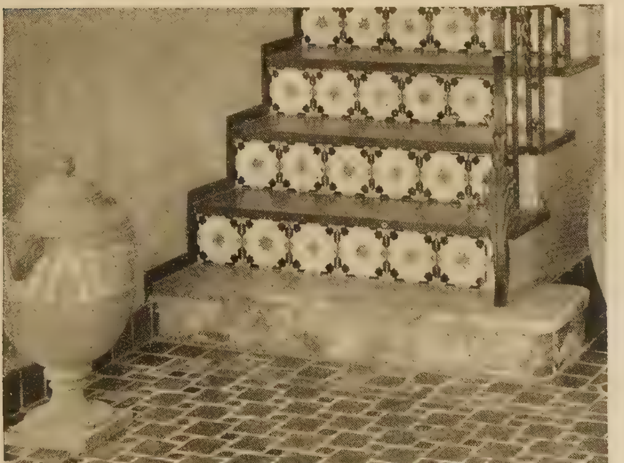
Square tile diagonally half black and half white



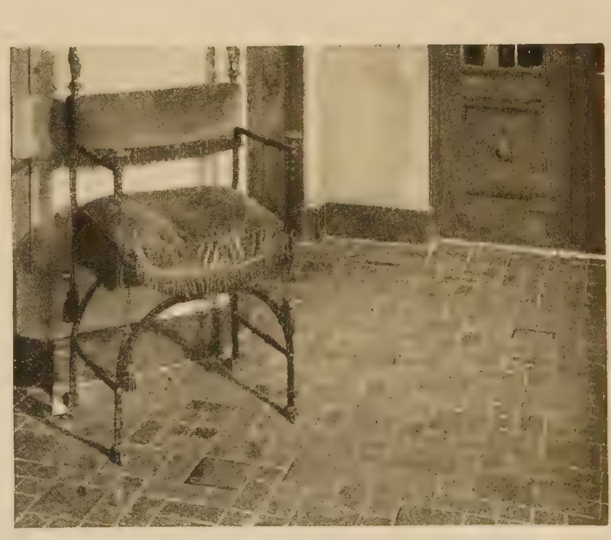
Small tile



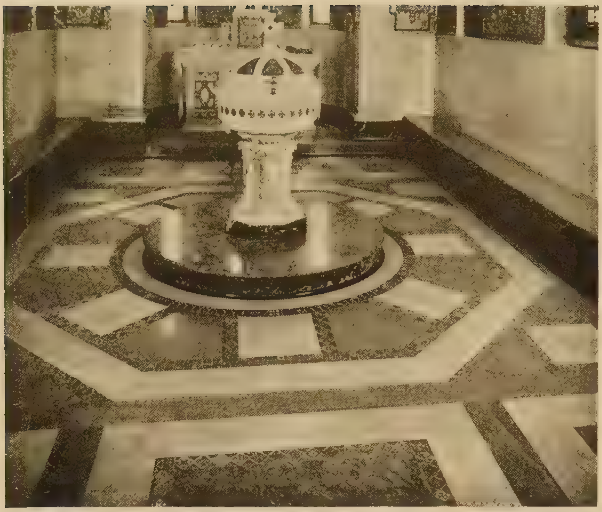
Small tile with color variation



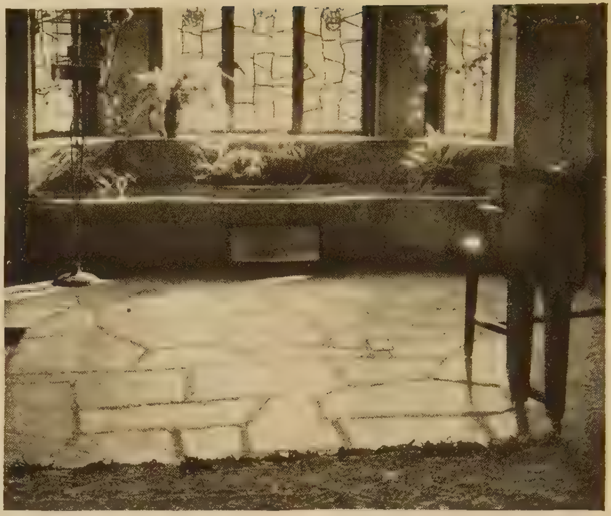
Tile in two sizes of squares in a stair hall



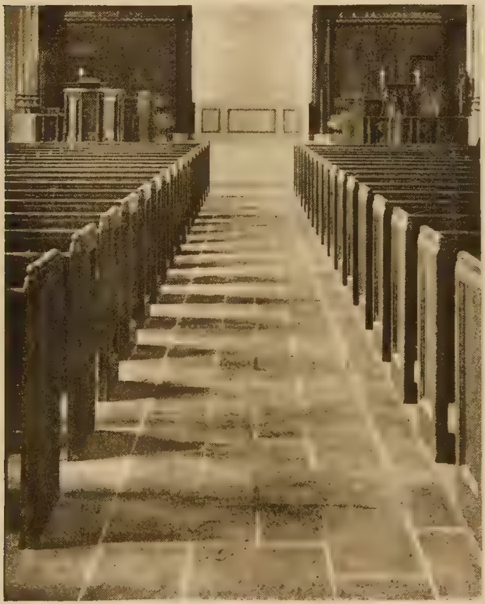
Tile in random pattern



Marble and tile in a baptistry

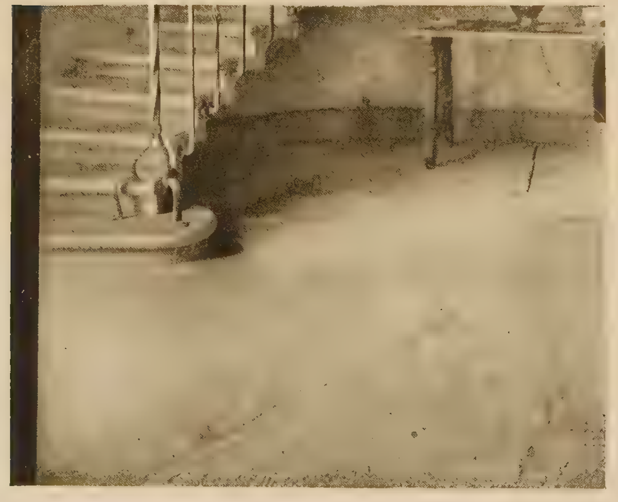


Irregularly broken stone flagging in a living-room

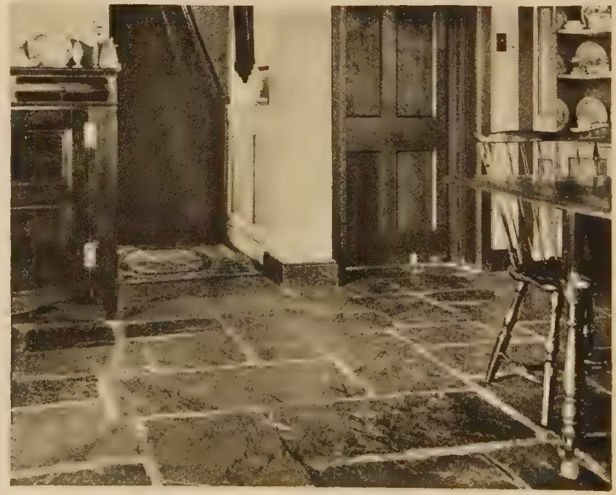


Rectangular stone flagging in a church aisle

Large rectangular-cut stone flagging in a memorial building



Stone flagging, radial and concentric



Stone flagging in random pattern

The Editor's Diary

Monday, June 3.—Lunched with Rutherford Boyd, discussing some of the possibilities of a mathematical basis in design. Boyd is perhaps the foremost representative of those who believe that the late Jay Hambidge uncovered at least a few principles relating design in general to certain mathematical ratios. Boyd has carried this a step further by demonstrating what happens when we use these mathematical ratios in design independently of the personal equation.

Wednesday, June 5.—Lunched with Lewis Mumford, and talked of the new series of articles which he is writing for us, on the broad subject of "Form in Modern Architecture." It seems to me that one of the real handicaps to-day in achieving great architecture is the separation between the building itself and the man who designs it. Such was not the case in past ages, when the architect also was the master builder. Have we not strayed so far in a realm of paper design that we no longer grasp the essence of the structure itself?

Thursday, June 6.—Found Leo Friedlander at his studio amid his damp-cloth-draped clay, and sculptor's tools, and brought back photographs of some representative pieces to print in the October issue. It is an interesting thing to see how the leading sculptors of to-day are reaching constantly for abstraction, avoiding the easier road that would lead to a commonplace realism.

* * *

Friday, June 7.—Messrs. H. R. Garden and Robert M. Allen up from Virginia, with renewed discussion of the early brickwork in that section of the country—just how much there is in the tradition that many brick were brought over in ballast from England; what evidence there is, on the other hand, that brickmakers came instead of their product, finding their clay beds near the buildings that were to be built; how the men who thus made the brick also turned mason and laid them up in walls. An interesting subject, of which we in the profession know very little, and I hope I have persuaded Mr. Allen, himself an architect, to devote some time to research along these lines, and put his findings into these pages.

Saturday, June 8.—If the diary is a bit meagre these days, the reason must be laid to protracted closetings with the embryonic pages of the midsummer issues, in anticipation of a long voyage through the South, Southwest, up the Pacific Coast, and back through the northern tier of States.

Monday, June 10.—Where among the ranks of business and professional men will you find individuals who are more generous and more chivalrous minded than the architects? Twice within the past few days, outstanding leaders in the profession have urged me to devote an issue of the magazine to the work of two other firms whose work has, in the opinion of these enthusiastic advocates, reached a particularly high plane of consistent excellence. And in both cases these men argued with the utmost ardor for such recognition of rival practitioners.

Tuesday, June 11.—William F. Lockhardt, back from a trip around the great circuit, speaking of the extent to which the merchants of the Pacific Coast—particularly about Los Angeles—put money into the elaboration of their stores and equipment. Even the smaller cafeterias spend almost incredible sums in giving these places everything in decorative effects, comfortable furniture, organs and similar accessories, that will invite the public.

Wednesday, June 12.—Ely Kahn, back from abroad, apparently somewhat disappointed with the progress of the modern movement over there. It seems once again the case that, in the mad rush for novelty and with the temporary distaste of all efforts of previous times and other peoples, work is being ground out by immature and untrained designers. Work of this kind will inevitably slow down and discourage our legitimate efforts to solve with our new methods and materials the new problems of present-day building.

Thursday, June 13.—Lunched with J. Monroe Hewlett and Buckminster Fuller at the Coffee House, lingering over the discussion of what those engaged in the education of architectural students face in these days. It becomes more and more difficult to interest the student in the foundations of architectural knowledge. The study of great monuments of past epochs fails to appeal. The younger men want to fly before they have learned to creep; to write before they have mastered even the simplest rules of grammar. One cannot hope to become a skilled surgeon without a study of anatomy, or an able lawyer without reading the fundamentals of law. The architectural student of to-day apparently believes that these foundations are a waste of time—that he should be expressing himself in new forms, new masses, without any particular regard for those elements of composition, of color harmony, of scale, which the race has been acquiring over many centuries and which can be observed and studied only in the outstanding examples of past achievement.

Friday, June 14.—J. M. Berlinger in to tell me of his self-imposed task of measuring the King Victor Emmanuel II Monument in Rome—a work that has perhaps never been equalled, in my judgment, as to perseverance and stupendous effort in measuring and drafting the endless detail of architectural and sculptural elaboration. Whatever may be one's personal appraisal of this monument, the fact remains that it dominates to-day the city of Rome, covering an area practically two city blocks square, rising to the height of a twenty-story building, profusely decorated with an array of sculpture, carving, inlay, of rare marbles on a vast scale. More recently, of course, it has become the tomb of Italy's Unknown Soldier. Since this is one of those architectural creations produced with a minimum of drawings, and a maximum of sculptural models, Mr. Berlinger's complete measurements form the only existing record of the work.

* * *

Monday, June 17.—With C. Beck to see the banking house which Cross & Cross have built for Lee Higginson & Co. on lower Broad Street. One detail of particular interest in the Greek adaptation for the interior is the use of marble mosaic for the great Doric columns. Bronze arrisses rib the mosaic of the flutes, startling the observer into the realization that here is a frank avowal that these columns are not the actual weight-bearers, but merely serve as very beautiful drapery for the steel within. Griffith B. Coale did a very beautiful mural frieze of great depth, depicting the shipping of all ages. How the painting of this was achieved in two months' time is one of the romances of modern American building, and Mr. Coale is going to tell it in a later issue.

Tuesday, June 18.—To the luncheon and pre-view of Contempora's Exposition of Art and Industry, wherein Bruno

Paul, Lucian Bernhard, Rockwell Kent, and Paul Poiret have produced rooms for various purposes, such as is becoming the standardized custom in exhibitions to-day. There are textiles, furniture, murals, lighting-fixtures, and the like, few of which seem to me to have any beauty whatsoever. Possibly beauty is regarded as an affectation by some of these designers in the new mode, the rigorous adherence to functional expression and utilitarian considerations being held to reign supreme. It is their use of color in wall treatments, room combinations, etc., that is most disturbing—apparently abandoning an attempt at harmony in favor of a terrific punch in the eye.

Wednesday, June 19.—Attended a luncheon at India House given by Mr. Paul Cravath for the publishers and editors of the technical journals. Ex-Ambassador James W. Gerard spoke on the forthcoming celebration this autumn of Mr. Edison's discovery of the incandescent lamp. A most unusual event, in that an inventor of a great benefit to humanity should live to see the fiftieth anniversary of his discovery.

Thursday, June 20.—Mark Barr in to talk over the publication of his forthcoming article, "Parameters of Beauty," and some of the ramifications of the centuries-old search for a mathematical basis of certain curves of life as we find them in animal and plant life—the horns of deer, the spiral shells, the growth of leaves about a plant stem. A fascinating subject, which has engaged the attention of mathematicians, botanists, biologists, and artists for many hundreds of years.

Friday, June 21.—Another example of the chivalrous attitude toward fellow practitioners' work is a call to-day from Dwight James Baum, telling me that in passing through Philadelphia recently he noticed and greatly admired the house of John J. Greenburg, designed by Tilden, Register & Pepper, architects, and suggesting that we should publish it. It will appear in these pages shortly.

Saturday, June 22.—Maxime Mongendre, Consul General of France, paid American architecture a particularly graceful compliment at The Architectural League dinner in honor of Marcel Chappey, holder of the 1929 French Travelling Fellowship.

"I do not love Europe less, and I do not think that it is diminishing Paris, or Rome, or Athens, these sovereign examples of an ideal, consecrated by centuries, to salute in New York and in Washington heirs who have become in their turn creators of a new standard."

Sunday, June 23.—Van Buren Magonigle pricks one of the bubbles of our architectural self-esteem in an article in the *Herald Tribune*, likening our skyscrapers to stage carpentry, and worse.

"For the first time in architectural history the skeleton has no relation to that which clothes and conceals it. Structure and vesture have always, up to now, been inseparably wedded. Always, up to now, the advent of a change has been heralded by a change in the vesture, and structural changes have rather slowly followed. But the skeleton and the flesh have now been divorced, and the skeleton, freed of all incumbrance, soars gayly upward, with the architectural profession flapping its wings in mad pursuit in a vain effort to overtake it and give it some clothes.

"If, as some allege, the skyscraper is the true expression of American genius, ask yourselves to-morrow as you look up and about you why the American genius expresses itself in buildings apparently of cardboard resting on plate glass and topped by buttresses that buttress nothing, resist no force except the force of common sense and do not even support themselves."

Tuesday, June 25.—Ely Kahn and Leon Solon brought to luncheon at The League an idea that deserves development—the organization of a series of talks and exhibitions for next winter, setting forth what certain outstanding architects are striving to do in their work. Such a correlated symposium, which might also find expression in these pages, would go far toward clarifying the present haze as to where American architecture is leading us in the present epoch.

Wednesday, June 26.—Word comes from the annual meeting of the American Society for Testing Materials, that the successful fireproofing of wood is in sight. Wood used for trim has been made fire-resisting and, with the discovery of some process which will remove the last trace of volatile gases, it will become fireproof. The curious part of this is that just as wood is thus made available for fireproof buildings, it is being superseded in many of its previous functions, by metals.

Thursday, June 27.—Samuel Yellin over from Philadelphia, with the Black Forest and Italy beckoning him away from his forge for the summer, and his chief worry the matter of whether or not space is to be had aboard some ship at this late date.

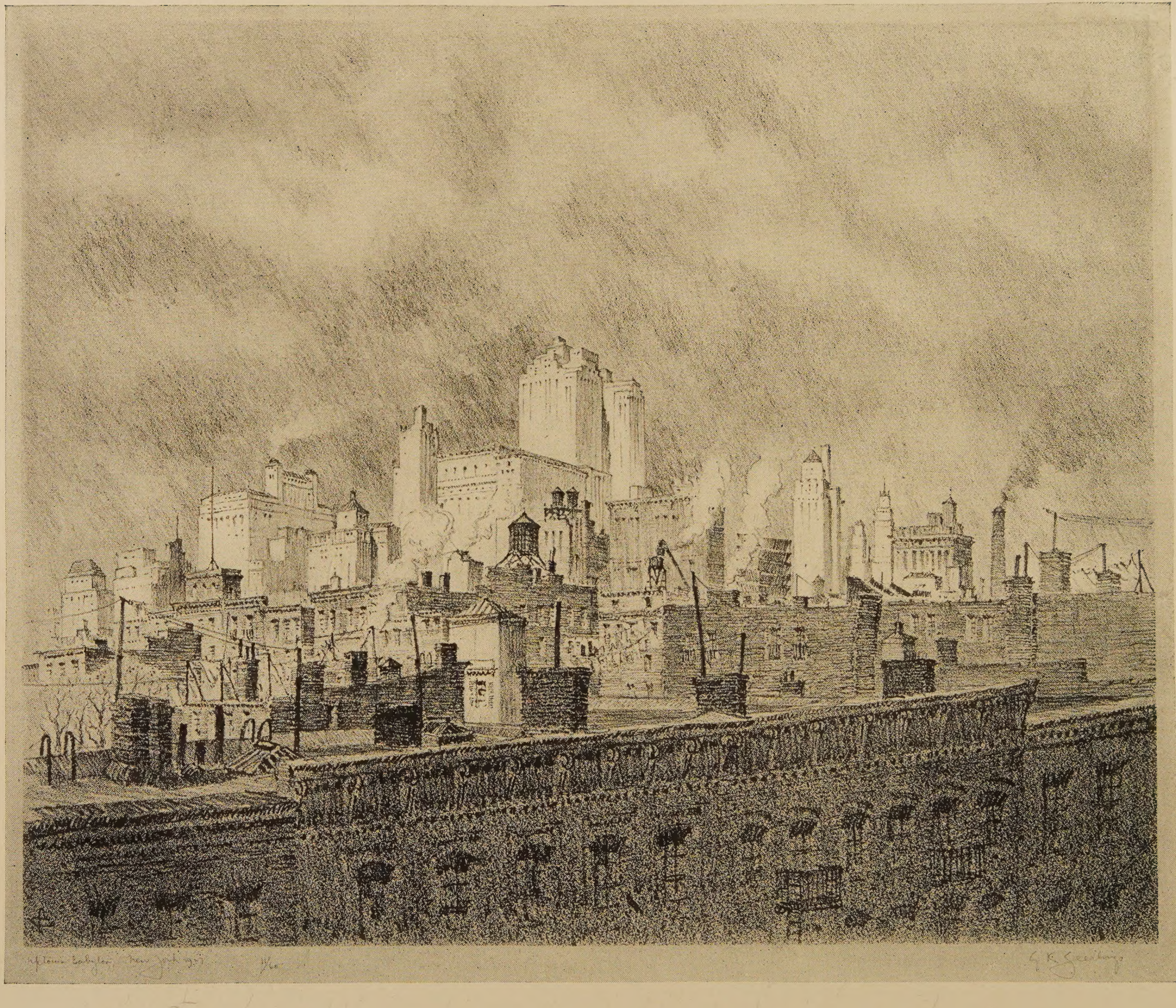
Ralph Walker telling us of his experiences in serving on a jury with Thomas Hastings and Charles Klauder to receive the Princeton seniors' theses and hear the students explain how and why they had thus solved the problems chosen. Before the conservative classic viewpoint of Hastings, the modern freedom from traditional bondage represented by Walker, and the moderate middle-of-the-road attitude of Klauder, the Princeton seniors must have felt that they had a tortuous passage to steer through to their degrees.

Friday, June 28.—Francis Keally tells me that architecture will be on the air in August. Keally himself will talk on airports, on the evening of August 8 over a wide hookup. Raymond M. Hood follows a week later, talking on the American Renaissance. Ralph Walker, on August 22, will talk about the modern skyscraper.

Saturday, June 29.—Planning with Buckminster Fuller for the writing and publication of a book on Dymaxion House. Since this house embodies principles hitherto unemployed, it seems fitting that the book itself should be produced along corresponding lines of efficiency and speed. Accordingly, we shall try within a week or so the experiment of having Mr. Fuller explain, with his model and drawings, the principles of design to a small gathering representing the various interests that might be involved—architecture, finance, engineering, sanitation, interior decoration, household economics, building, etc. A court stenographer will record not only the initial explanation of Mr. Fuller's, but also the discussion which may be aroused thereby. In this way it is hoped that within the space of three hours the complete "copy," needing only minor editing, may be produced.

Tuesday, July 2.—Raymond Hood is turning over in his mind the possible subjects that might be chosen for his forthcoming radio address. One is the fact that we are living in a period which for sheer bulk of spending for architectural effect makes such previous high spots as the Florentine Renaissance look like a New England barn-raising in comparison. Another subject—which I trust we persuaded him to adopt—is the popular misconception of so-called "Modern Design." The public is getting the habit of applying the name to anything which is merely bizarre, whereas the term rightly belongs to that which is created to-day by one whose mind is open to what the present development of science, sociology—civilization, let us say—has put into our hands to use. People are apt to forget that in every period in the history of art, designers have been designing in the modern manner—that is, in the manner which at that particular moment seemed to them to mark the furthest advance of art knowledge. We are doing that to-day, and this broad, natural effort should not be obscured by a sporadic outcropping of mere angular eccentricity.

Thursday, July 4.—At the office all day in a final effort to leave the editorial side of the magazine in a condition to function smoothly during a two months' absence, and into a sleeper at midnight, bound south.



"*Uptown Babylon,*"
from the
lithograph by
Gerald K. Geerlings

[ARCHITECTURE]
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